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SYMPOSIUM ON GALLBLADDER DISEASE

ETIOLOGY AND PATHOLOGY OF CHOLECYSTIC DISEASE

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The primary functions of the gallbladder are the storage and concentration of bile, and the regulation of pressure within the biliary passages. Bile is secreted continuously by the liver, the amount being about 1 liter per twenty-four hours. Proportions of bile reaching the gallbladder are sometimes concentrated as much as ten times by aqueous absorption. Normally small amounts of bile salts and cholesterol are also absorbed. In addition to concentration, the viscosity of the bile may be further increased by the secretion of mucus and sometimes by the addition of cholesterol from the gallbladder mucosa.

The bile ducts are normally fibro-elastic tubes containing practically no muscle. Pain accompanying the passage of stones is due to distention of the ducts, with resultant pressure on the nerve endings. The nerve supply to the gallbladder and ducts is from the vagus nerve and the sympathetic system. Reflex irritation of these nerves accounts for much of the gastric symptomatology associated with gallbladder disease. With chronic cholecystitis there is frequently a progressive decrease of gastric acidity, and when complete achlorhydria occurs there is usually no return of acid secretion even after removal of the gallbladder.

Pathological conditions of the gallbladder are always secondary to disturbances in function or structure. Etiological factors include biliary stasis, infection, and derangement of the lipoid metabolism, each contributing toward some type of cholecystic disease. Stasis, *per se*, predisposes to infection and to the formation of gallstones. Stagnation of the bile within the bladder may be caused by: dietary factors, including inadequate intake of fats, proteins, and fruit juices; inflammation of the gallbladder; stricture, or obstruction of the cystic or common duct; hypertonicity or spasm of the sphincter of Oddi; duodenal conditions, including hypertonicity, inflammation or reverse peristalsis; various conditions of the colon.

Reflex contraction of the sphincter of Oddi has been shown experimentally to result from constipation, irritation of the colon, or stimulation of the various divisions of the splanchnic nerve. Clinically, it has been found necessary at times to eliminate spasm of the colon before the true status of the gallbladder could be evaluated. Further, the close relationship between cholecystopathy and abnormal functioning of the alimentary tract is indicated by the fact that the incidence of cholecystic disease is found to be doubled in persons with peptic ulcer, recurring appendicitis, or diverticulosis of the colon.

The mode of infection in cholecystitis is still a disputed point. It is thought by some to occur by way of the blood stream and presumably from foci in the oral cavity, as Streptococcus viridans is commonly found. Other investigators consider the commonest cause to be lymphatic transmission from the liver of the organisms normally present in the portal blood. The lymphatics of the liver capsule penetrate the wall of the gallbladder and would appear to give relatively easy access to the extensive bacterial flora, chiefly of intestinal origin, found in the liver. The importance of this lymphatic connection is shown by the frequent association of local hepatitis and cholecystic disease. Extension of infection by way of the biliary passages,

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from either the duodenum or the liver, is considered rare. Against this possibility are: (1) The normal activity of the sphincter of Oddi, together with the fact that the duodenum is ordinarily sterile, especially when hydrochloric acid is present in the gastric contents. (2) The fact that the bile is normally bactericidal, no growth of organisms occurring when its concentration of salts is even 70 per cent of normal. Pathogenic organisms found in the gallbladder bile are usually in association with established cholecystitis. (3) The fact that the biliary mucosa is considered rather resistant to direct bacterial invasion.

Cholesterol anomalies of the gallbladder constitute a frequent pathological finding. Cholesterol is derived from exogenous and endogenous sources, and is also synthesized within the body. It is probably continuously formed and destroyed within the tissues. For practical clinical purposes the influence of diet on blood cholesterol may be disregarded. Further, there appears to be no constant relationship between the level of plasma cholesterol and its concentration within the bile. The elevation of cholesterol in both plasma and bile, occurring during pregnancy, is at present without adequate explanation.

Cholesterol in bile is held in loose chemical combination with the bile salts, and tends to be easily precipitated by increased concentration of the bile within the bladder. Normally there is no selective absorption of bile elements, though following infection it is thought that bile salts are rapidly absorbed and cholesterol is absorbed very slowly—if at all. Moreover, the inflamed gallbladder mucosa may even add relatively large quantities of cholesterol to the bile, due either to active excretion or to desquamation of cholesterol containing mucosa cells. Under circumstances not yet understood the gallbladder mucosa at times is found to be loaded with cholesterol, up to one hundred times the usual amount. This excess apparently is deposited in the mucosa after absorption from the bile. Cholesterosis is not regarded as a manifestation of cholecystitis, and is rarely found in the presence of advanced inflammatory or degenerative change. Cholesterosis, *per se*, does not produce symptoms; however, gallstones are found in one third of the cases.

Gallstones, in general, are made up in large part, and at times solely, of cholesterol; their formation for the most part is metabolic in origin and apparently dependent largely on factors operating within the extrahepatic biliary tract. Snell believes that stones occur usually as a single shower of amorphous or finely crystalline material, bacteria rarely being the primary cause. In malignancies of the gall bladder, stones are thought to be a possible etiological factor, as they are found in 80 to 90 per cent of the cases.

Conclusion

Although much remains to be known relative to the pathogenesis of cholecystitis and cholelithiasis, it is becoming increasingly evident that gallbladder diseases are closely correlated with dysfunctions of other organs and probably represent secondary manifestations of general systemic conditions.

SIGNS AND SYMPTOMS OF CHOLECYSTIC DISEASE

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The history of cholecystic disease dates back many centuries, but it was not until the seventeenth century that medical writings contained the report of a case wherein an attempt had been made to correlate the complaint of the patient with the findings at necropsy. The description of this case recorded three hundred years ago makes good reading. I quote as follows: "Horrible and stupendous calculi, coagulated in the gallbladder, their shape, color, number and wonderful effects, producing vomiting, nausea, heaviness, low spirits, tearing of the stomach and hypochondria, atrophy, tabes, obstruction of the viscera, inflammation, incurable jaundice, sleeplessness, lassitude, sadness and melancholic affections; inclination to anger, difficulty and heat of the urine, lepra of the skin, fever and sudden death."

That affections of the gallbladder and bile passages are exceedingly common among patients of middle age or older is well recognized. Pathologists put the incidence of gallstones in the adult population at from 5 to 20 per cent, and it is further believed that at least 50 per cent of all clinically significant cholecystic disease is associated with calculi.

Patients of either sex frequently present a multiplicity of complaints referable to the

gastro-intestinal tract, and there is always a question as to how many can be attributed to the gallbladder, how many to pathology elsewhere, and how many to functional conditions. Snell and Walters refer to the gallbladder as the scapegoat of the abdominal organs. Certainly it is true that since the advent of surgery many innocent gallbladders have been removed. Therefore, let us consider the signs and symptoms that can be relied upon (1) as diagnostic of cholecystic disease, and (2) as criteria for operation. I shall discuss first the acute manifestations of cholecystic disease, and then the chronic.

Acute Cholecystitis

The clinical picture of acute cholecystitis is quite variable. In the absence of stones the process may be extremely mild; in the presence of stones the process may be most dramatic. In acute cholecystitis with stones the symptoms are more severe than in the non-calculous types, and they may come on with alarming suddenness.

Biliary colic is of course the most classical symptom of cholecystitis with or without stones. Attacks of colic usually arise in the right upper quadrant and radiate to the right subscapular region; occasionally the pain may be confined to the epigastrium or left upper quadrant; or it may originate in the back and simulate lumbago. Belching, nausea, and vomiting frequently accompany the pain. Pain referred to the neck or shoulder is usually indicative of local peritonitis with diaphragmatic involvement. The common sequelae of residual tenderness and slight fever help to distinguish true gallstone colic from the questionable variety. The development of icterus along with the preceding symptoms strengthens our diagnosis.

The dyspepsia of cholecystic disease is not confined to this condition, and may be observed in conditions such as reflex pylorospasm and aerophagia. The typical complaint of the gallbladder patient is that of distention, with belching, particularly after a fatty meal. Numerous vague symptoms such as vertigo, anorexia, headache and diarrhea are frequently mentioned. A tendency to remissions and exacerbations is also rather characteristic of this condition. Hypochondriasis is a feature in some cases of cholecystic disease and often complicates an evaluation of the presenting symptoms.

The signs of cholecystic disease are often meager, as the patient frequently presents herself in the interval between attacks. A distended gallbladder may be felt, particularly if it is palpated shortly after the attack. Tenderness over the gallbladder fossa is frequently a conspicuous finding; occasionally heavy percussion over the lower ribs on the right side may elicit pain. Hyperesthesia of the overlying skin is frequently present. During the attack pain and tenderness are conspicuous (at the onset) in the epigastrium, later localizing to the right upper quadrant.

Chronic Cholecystistis

The clinical course of chronic cholecystitis varies immensely from the above picture. The symptoms are variable in the extreme, and cover almost a complete range of human ailments. In this group biliary colic is mentioned by only approximately 25 per cent of patients. Constant dull pain in the right upper abdominal quadrant, often aggravated by the taking of food is a common symptom; it should not be confused with true colic. Practically all patients have an intolerance to fats, coarse foods and heavy meals. Gaseous distention with bloating and belching is a common symptom and often cannot be attributed to any particular type of food. Regurgitation of food, pyrosis, and occasionally nausea and vomiting occur. Constipation with alternating diarrhea is common. Fever of low grade, and transient jaundice are occasional findings.

The chronic gallbladder, like the chronic appendix, seems to fall within that region on the borderline between functional and organic disease.

Summary

The following criteria for the diagnosis of cholecystic disease for which operation is advisable are submitted: (1) A satisfactory account of one or more attacks of biliary colic, with or without fever, chills or jaundice; (2) residual tenderness following these episodes; (3) flatulent indigestion with distress after full fatty meals; (4) cholecystographic evidence of non-functioning gallbladder or of stones; and (5) the exclusion of conditions that simulate cholecystitis.

ROENTGENOLOGIC CONSIDERATION OF CHOLECYSTIC DISEASE

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Historically speaking, there are three natural epochs in the application of radiology to the visualization of the biliary tract. The first era covers the period from the discovery of the x-ray until 1910, during which time the composition, structure, and density of gallstones were of primary interest. The first demonstration of a gallstone in a living individual was in New York City by Beck, who later proved his finding at operation. The second epoch had its beginning in 1910 and ended with the discovery of cholecystography by Graham and Cole in 1923. This period was characterized by the study of infection, of the formation of gallbladder adhesions, and of their effect on surrounding viscera rather than of gallstones alone. Persistent research led to the advancement propounded in 1923 by Graham and Cole—the basis of modern cholecystography. They conceived the idea that the gallbladder could be rendered visible by the x-ray after being filled with a contrasting medium. This embodied a new and original radiological principle—the utilization of the specific function of a system to change the density of a secreted fluid. Cholecystography is, therefore, a test of physiological capacity in contradistinction to the wholly mechanistic nature of the opaque meal, pyelography, and the like.

On the basis of the work of Able and Rowntree, who had demonstrated that the phenolphthaleins as a class were largely excreted in the bile, Graham and Cole investigated phenolphthalein in combination with bromine and iodine, and found that, when injected intravenously, the dye was excreted in the bile. In this way, a sufficient quantity of halogen was obtained in the gallbladder to cast a shadow on exposure to x-ray. Calcium salts were tried but were soon replaced by the more soluble sodium salts. Shadows were obtained by intravenous, oral, and rectal administration. Once in the gallbladder, the bile and iodine or bromine became more concentrated because of absorption of water by the wall of the viscus. It is during this period of about twenty-four hours that shadows may be procured on x-ray films. The iodine is removed from the normal gallbladder as it empties, and with it goes the opacity to x-ray.

Many techniques of cholecystography have been developed, and numerous variations have been made by technologists. It might be stated that the two methods most commonly used are the intravenous and the oral. The intravenous gives more frequent reaction, but surer visualization. We use it in those cases not visualized by the oral method. The oral method, at the present time, seems to be the more popular, and, in general, consists of the following procedures: At 5 p. m., one drachm of paregoric is given to allay any gastro-intestinal upset which may follow taking the dye. At 6 p. m., dinner is taken (low in fat), and the dye is given immediately thereafter. The first plate is taken 16 hours later. Two hours later another film is made. Then a palatable fat meal consisting of a milk and cream mixture, some butter, etc., is given to the patient; three hours following this another film is made. This is twenty-one hours after the dye is ingested.

The number of films taken and the length of time between films varies with the technician. The double oral method may be used, particularly in patients with a thick abdominal wall, or in questionable cases where there is non-visualization. In the latter, this technique will increase the amount of available halogen, and will present a greater possibility of visualizing the gallbladder. Collins advises the use of pitressin in order to diminish the amount of gas present and to produce evacuation; this, he states, will make the film clearer, and will aid in interpretation. Antonucci propounds a method of rapid cholecystography, using the oral dose plus intravenous hypertonic glucose.

Reactions to the oral administration of the dye are relatively few in number, and may be listed as follows: nausea, vomiting, diarrhea, and abdominal cramps. Use of paregoric as stated above will frequently prevent these symptoms.

Contraindications to cholecystography are few. Among those most commonly mentioned are: cardiac disease with marked hypertension or hypotension; advanced liver disease; obstructive jaundice, (as it may lead to a fatal pancreatitis); and advanced pregnancy, in which cases the gallbladder usually cannot be visualized.

Cholecystographic criteria of the patho-

logical biliary tract may best be understood by the following classification:

1. Non-visualization of the gallbladder
2. Faint visualization of the gallbladder
3. Delayed visualization of the gallbladder
4. Deformities of the gallbladder
   a. Congenital
   b. Acquired
      (1) Extrinsic
      (2) Intrinsic
5. Cholelithiasis
6. Persistence of the gallbladder shadow
7. Excessive size of the gallbladder shadow.

With these criteria kept in mind, the interpretation of the cholecystogram will be greatly simplified.

Among the many conditions which may be mistaken for stones in the biliary tract may be mentioned calcified costal cartilages, opaque material in the bowel, renal calculi, calcified cystic gland, pancreatic calculi, superficial skin tumors, and calcified right adrenal gland. In spite of these possibilities for error, cholecystography has been reported from 60 to 95 per cent accurate in large series of cases numbering from 2,000 to 10,000. Our experience with this technique tallies well with the reports in the literature.

Criteria for the interpretation of the cholecystogram may be listed as follows:

1. If the gallbladder concentrates, alters its size, and empties, it is regarded as normal, regardless of the method of administration of the dye.

2. The following findings are indicative of a pathological biliary tract: non-visualization; finding of non-opaque stones; faint cholecystograms, indicating impairment of concentration and representing a loss of gallbladder function which is proportional to the degree of involvement; fixation and persistent deformity—"pericholecystitis"; constancy of size with lack of density; retarded appearance of the shadow; persistence of the shadow.

All of these criteria must be kept in mind and considered before interpretation of a cholecystogram will be significant.

We now turn to nomenclature and interpretation of roentgenograms. In separating the results of cholecystographic study, the following nomenclature is suggested:

1. *Functioning gallbladder.* Such a term would apply to a gallbladder which shows good concentration of dye and good emptying after a fat meal.
   a. *Functioning gallbladder with stones.* This would include those gallbladders which show good concentration and empyting, but in which stones could be identified.
   b. *Functioning gallbladder with mural growths.* Such an interpretation would include those gallbladders which show good concentration and emptying power, but in which a filling defect remains in the same location.
   c. *Functioning gallbladder with adhesions.* This would mean that group which show good concentration and emptying, but which, because of their peculiar contour or location, indicate pericholecystic adhesions. This diagnosis is difficult and is added merely for the sake of completeness.
   d. *Functioning gallbladder with anomalies.*
2. *Partially functioning gallbladder.* Such a term implies an inadequate concentration of dye, poor emptying power, or tendency to enlarge after a fat meal.
   a. *Partially functioning gallbladder with stones.* This applies to those gallbladders which show poor concentration or emptying and in which stones can be demonstrated.
   b. *Partially functioning gallbladder with anomalies.*
3. *Abnormally functioning gallbladder.* This would include those cases in which there was very poor or no gallbladder visualization or those in which the gallbladder increased in size during the examination, thereby indicating a reversal of flow.
   a. *Abnormally functioning gallbladder with stones.* This would mean those cases with poor or no visualization in which opaque stones could be demonstrated.
   b. Milk of calcium bile.
   c. Calcified gallbladder.
   d. *Abnormally functioning gallbladder with anomalies.*

It might be interesting to discuss a few of the pathological conditions which may be found in cholecystograms. Non-calculous cholecytisis may produce a dense, faint, or absent shadow, the density of the dye de-

pending on the amount of damage to the wall of the viscus. Pericholecystic adhesions is a term widely used, but such a diagnosis is a most difficult one in the hands of the most efficient and is even then subject to error. Calculous cholecystitis, caused by opaque gallstones, presents a shadow, the density of which is dependent upon the amount and distribution of calcium. It is probably true that less than one third of gallstones are radio-opaque. Tumors of the gallbladder may also be visualized. Papillomas are usually small, single or mutiple, and most often less than one centimeter in diameter. The diagnosis depends upon the finding of one or more clear oval or circular defects which remain constant with changes in position of the patient. Such a defect will always be adjacent to the wall of the gallbladder. They are most likely to be seen during the evacuation of the opaque dye from the gallbladder. Adenomas are usually larger and are most often found in the fundus. They too are most frequently found during the emptying phase of the gallbladder.

Failure of the gallbladder to diminish in size after the proper technique has been used may be due to mechanical changes in the cystic duct, to small valve obstruction of the cystic duct, to milk of calcium bile with or without a cystic duct stone, to spasm of the sphincter of Oddi, to anomalies, adhesions, and reflex phenomena from lesions outside the biliary tract.

Increase in size of the gallbladder may be seen occasionally.

Practically all of the conditions which interfere with the emptying of the gallbladder or even increase its size have been loosely grouped under the heading of "dyskinesia" of the gallbladder. Further investigation is necessary to evaluate the meaning of this term.

Anomalies which may be found in cholecystography are relatively rare but should be mentioned. They may include congenital absence of a gallbladder, double gallbladder, diverticula, changes in position, and Phrygian cap deformity.

Conclusion

Cholecystography may be said to be an accurate but not infallible means of detecting disease of the biliary tract. It is not a procedure to be used injudiciously without proper regard for the many considerations which may affect the correct interpretation of the film.

AN EVALUATION OF LABORATORY PROCEDURES IN CHOLECYSTIC DISEASE

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According to a recently published textbook on DISEASES OF THE GALLBLADDER[1], "By far the most important laboratory procedure in the diagnosis of diseases of the gallbladder is, of course, cholecystography." This subject has been ably covered by Dr. Rainey, and I should be reluctant to use your time for a discussion of procedures which are seldom of direct diagnostic aid. However, because gallbladder sufferers are so frequently the victims of other associated diseases, the clinical laboratory is often an aid in the evaluation of the total status of the patient even though it fails as a positive diagnostic agent in cholecystic disease alone.

Examination of the Urine

In the absence of biliary obstruction or hepatic cell necrosis, examination of the urine gives little help. Albuminuria, cylindruria, and occasionally glycosuria may follow acute cholecystitis or biliary colic. If biliary obstruction occurs or if there is hepatic cell necrosis sufficient to allow regurgitation of bile into the blood stream, the urine will be stained with bile, and bile-stained casts may be seen under the microscope. Tests for urobilin and urobilinogen are unsatisfactory in the presence of bilirubin, but if these constituents are present in abnormal quantities it is evident that total biliary obstruction does not exist, since these products are derivatives of the intestinal bilirubin.

Examination of the Blood

It is assumed that appropriate serological tests are made in every case, as it is of the utmost importance to exclude tabes and visceral syphilis.

The red cell sedimentation rate may be accelerated in the presence of acute or chronic infection, and in about half the cases

1. Walters, Waltman and Snell, Albert M.: Diseases of the Gallbladder and Bile Ducts, Philadelphia, W. B. Saunders Company, 1940.

leukocytosis occurs; however, the help to be derived from these studies is of a general nature only and of no specific diagnostic value.

Anemia is an uncommon finding in uncomplicated cholecystic disease, and, where it occurs, it is usually attributable to general malnutrition, frequently from unwise dietary measures. If anemia is present, blood tests must be made to demonstrate possible hemolytic icterus or pernicious anemia.

Even without clinical icterus there may be hyperbilirubinemia, and here the van den Bergh reaction properly interpreted will be of great value. If we could abolish from our reading and our thinking the standard textbook classification of *obstructive* and *non-obstructive* jaundice and for this substitute a conception of *regurgitative* and *retention* jaundice, as proposed by Rich[2], the qualitative van den Bergb reaction would acquire greater significance. Without entering into a discussion of the theory of the indirect and direct reactions, it is sufficient for clinical purposes to know that the direct reaction is evidence of entry into the blood stream of whole bile—that is, bilirubin which has passed through the hepatic cells and become mixed with the other constituents of the bile. Obviously, then, whole bile in the blood, bile pigment in the urine, and acholic stools may be due as easily to hepatic cell destruction, which would allow regurgitation of bile into the blood, as to classical obstruction of the bile ducts. Rapidly fluctuating values for serum bilirubin, particularly following bouts of pain, are almost diagnostic of obstruction by stone, whereas a fixed high value for serum bilirubin is nearly always associated with obstruction due to neoplasm.

The indirect reaction tells us that bilirubin which has not been excreted by the hepatic cells is in the serum in abnormal quantities, as a result of an inadequate *rate* of excretion by the hepatic cells. This inadequate *rate* of excretion may be due either to an abnormal accumulation of the products of blood destruction or to a functional slowness of hepatic cell excretory activity, or more commonly, to both. Where the van den Bergh reaction is indirect there will be bile and urobilinogen in the intestine, and urobilin, but not bilirubin, in the urine.

Other chemical constituents of the blood which may be changed by some of the results of cholecystic disease are the blood urea and chlorides. After severe vomiting, the former may be elevated and the latter diminished. Blood dextrose may be elevated, usually because of associated mild or latent diabetes. Pancreatitis arising because of stones in the common duct or direct extension of infection may cause significant elevations of the serum lipase and amylase. Significant reduction in the albumin fractions of the serum proteins may result if hepatic cell damage is extensive.

The prothrombin clotting time of blood plasma is increased in the regurgitative type of jaundice, apparently because bile in the intestine is essential for the proper absorption of vitamin K, the precursor of prothrombin. There is accumulating evidence, however, that the liver is the seat of formation of prothrombin and that liver disease, *per se*, may give rise to increased prothrombin clotting time.

Examination of the Gastric Juices

For many years it was believed that there existed a close association between cholecystic disease and achlorhydria and hypochlorhydria. Actually, when the figures are broken down with relation to age and sex there does not appear to be any significant statistical correlation.

The Liver Function Tests

These are of limited value unless there is an associated hepatitis. For convenience, the tests may be divided into those that test the excretory powers of the liver and those that are based upon the metabolic functions of the liver. Examples of the former are the quantitative van den Bergh reaction and the bilirubin-excretion, the bromsulfalein, and the rose bengal tests. In each of these tests the material is injected intravenously, and after the lapse of a specified interval of time the concentration in the serum is determined, and the rate of excretion is estimated from the quantity retained in the serum. These tests will be of no value, of course, if biliary obstruction exists; obviously, whether it is damaged or not, the liver cannot excrete the injected substances if the exit is closed.

Tests based upon metabolic functions of the liver may be of considerable value, since they are applicable even in the presence of jaundice. The levulose and galactose toler-

2. Rich, Arnold R.: The Pathogenesis of the Forms of Jaundice, Bull. Johns Hopkins Hosp. 47:338-377, 1930.

ance tests are measurements of the liver's ability to convert these substances to glycogen. Of the two, the galactose test is much simpler technically and apparently of equal value. The patient fasts for twelve hours, and is then given 40 Gm. of galactose in 500 cc. of water. Normally, or in jaundice due to biliary obstruction, 3 Gm. or less are excreted in five hours; where there is hepatic cell destruction, the urinary excretion may be 4 or 5 Gm. or more in five hours.

The hippuric acid test calls upon a detoxicating function of the liver—that is, the synthesis of hippuric acid from ingested benzoic acid. One method is to give 5.9 Gm. of benzoic acid orally, and to determine the quantity of hippuric acid excreted hourly in the urine for four hours thereafter. If the liver possesses some reserve, from 3 to 3.5 Gm. are excreted within this time.

It should be kept in mind that the above tests are purely functional. A negative result does not necessarily indicate the absence of liver injury. When it is remembered that McMaster and Rous have shown that, in the dog, 95 per cent of the excretory function of the liver could be abolished before jaundice appears; and that Mann has found that 80 per cent or more of the liver could be removed without a fall in urea production, it is obvious that liver disease may exist without its condition being revealed by any of these means.

Duodenal Drainage

It would seem that this procedure should be of inestimable value in determining the presence and extent of biliary tract disease. Indeed, following its introduction by Lyon there were for many years enthusiastic advocates of the method. Because it has been generally accepted that gallbladder bile or the so-called "B" bile could be obtained in a practically pure state from the duodenum after appropriate stimulation of the gallbladder by fats, magnesium, or pitressin, it was felt that a study of this B bile would yield valuable information concerning the condition of the gallbladder itself. Unfortunately, the very authenticity of this B bile has been questioned, particularly by Lintz, who found characteristic B bile in the duodenum of a patient whose gallbladder was congenitally absent. Although it is a reasonably safe assumption that the B bile is derived from the gallbladder, failure to aspirate B bile is not necessarily due to pathologic change in the gallbladder or to occlusion of the cystic duct. Perhaps the single most valuable result of duodenal drainage lies in the repeated demonstration of complete absence of intestinal bile: this, in the presence of jaundice, is almost certain evidence of neoplastic occlusion.

The bile, once obtained by duodenal drainage, may be studied by a variety of methods:

1. Its general appearance and physical properties may be noted; however, because of the unavoidable admixture of gastric and duodenal juices, these observations, in general, are of doubtful value.

2. Microscopic examination of the cellular constituents, even though it shows the presence of red cells, leukocytes, and epithelial cells, is not necessarily diagnostic of biliary tract disease, since the source of those cells cannot be proved with certainty. Also, even with immediate fixation, there is a variable degree of digestion.

3. The demonstration of cholesterol and calcium bilirubinate crystals in combination is, according to workers of considerable experience in the crystallography of the bile, almost certain evidence of the presence of gallstones; and the absence of these crystals they believe to be equally good evidence of the absence of stones.

4. Bacteriological studies have, so far, yielded disappointing results. For more than two years I cultured innumerable specimens of bile obtained by duodenal drainage, and I cannot say that in more than 2 or 3 cases the results were of any significance. When it is remembered that even in acute cholecystitis, cultures taken at operation are more often sterile than not, and that in chronic inflammation the percentage of positive cultures is very low, it is not particularly surprising that in duodenal drainage, with its widespread chances of contamination, the bacterial growth, if any, seems to bear little relation to the observed disease.

5. Chemical studies have shown that the ratio of cholesterol in the bile to bile salts is an important factor in the formation of gallstones. In normal bile this ratio is between 1:20 and 1:30. According to Andrews, deposition of cholesterol occurs when the ratio falls to 1:13. The hydrogen ion concentration is also said to be of importance in the formation of stones, a pH toward the alkaline side favoring precipitation of calcium salts.

Conclusions

While it remains a possibility that laboratory methods, some of which I have very briefly discussed, in the hands of workers thoroughly familiar with the microscopy and chemistry of the bile have definite value, to most clinicians the laboratory is probably of limited aid. My own impression, after a modest experience with most of the procedures enumerated, is that we still need more and better methods.

DIAGNOSIS OF GALLBLADDER DISEASE

(Correlation of History, Physical Examination, and X-Ray Evidence)

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WINSTON-SALEM

Many years ago Dr. David Riesman began a paper with a sentence which is even more appropriate now than then: "The upper abdomen is to the human body what the Balkan states are to Europe — a constant source of strife and unpredictable events." Of the abdominal Balkans, the gallbladder is perhaps the most important. It is the most common cause of digestive disorders in the latter half of life.

Since acute cholecystitis is comparatively easy to recognize, and is not nearly so frequent as is chronic gallbladder disease, only the latter will be considered in the brief time at my disposal.

Predisposing Factors

In the diagnosis of chronic cholecystitis, it is helpful to recall the predisposing causes. First is age; gallbladder disease is far more common after 40, though it may occur earlier. Next is sex; three times as many women as men are affected. Pregnancy perhaps accounts chiefly for this. Dr. W. J. Mayo[1] found that 90 per cent of women operated on at the Mayo Clinic for gallstones were mothers. C. J. Watson[2] states that, while 5 to 10 per cent of adults are found to have gallstones at autopsy, probably 20 per cent of women who have borne children are so affected.

1. Zech, R. L.: Relation of Gallstones to Pregnancy; Report of Case, Northwest Medicine, 29:468, 1930.
2. Watson, C. J.: Diseases of Gallbladder and Bile Ducts, in Cecil: Textbook of Medicine, ed. 5, Philadelphia, W. B. Saunders Co., 1940, p. 868.

Another factor of considerable importance is that of weight, since the proportion of cholecystitis is considerably higher in the heavyweight division. Excess weight is often associated with the habit of eating heavy, greasy meals. Irregular meals, especially the omission of the mid-day meal, predisposes to cholecystitis by the stagnation thus produced.

A sedentary occupation is another predisposing factor, all the more influential if pursued by one who is a valiant trencherman.

Previous infections, especially typhoid fever, are to be considered. There are still enough of the older generation who have had typhoid fever to make this an important factor. The intestinal type of influenza—which may have been a disguised attack of acute cholecystitis—is not infrequently followed by gallbladder symptoms.

History

The past history is of great importance in the diagnosis of cholecystitis. The part played by pregnancies, especially repeated pregnancies, should be emphasized. The patient with gallbladder disease will usually tell a story of repeated or persistent digestive discomfort. The most common symptoms noted are a feeling of fullness after eating; eructations, frequently sour; and a sensation of pressure around the waist, as if the clothing is too tight. Often the patient, if a man, will unfasten the lower buttons of his vest, or loosen his belt after meals. The patient may state that he sits down to the table hungry, but feels full after a few mouthfuls. Another frequent complaint is that he cannot eat fried or greasy foods without discomfort. A clinical test that is sometimes employed is to have the patient eat a fatty meal as a provocative test.

Attacks of colic with typical radiation to the epigastrium and under the right shoulder blade may be described. These are not necessarily severe enough to require a hypodermic; individuals vary so in their reaction to pain that the personal equation must be considered. One may endure without a sound an attack that would require repeated doses of morphine in another. A rather striking characteristic of biliary colic is its tendency to come at night. A possible explanation for this is that a hearty meal is apt to precipitate such an attack, and many, if not

most individuals make the evening meal their heaviest one.

Another significant sign is jaundice, particularly following an attack of colic. Of almost equal import is the patient's statement that he has noticed highly colored urine and pale or white stools.

Physical Examination

Upon examination the victim of chronic cholecystitis will usually, though by no means always, be overweight, and in the latter half of life. The tongue is usually coated. The conjunctiva, more often than the skin, may be found to have a yellowish tinge. This, it is hardly necessary to recall, can be seen only in daylight, never by artificial light. In the presence of jaundice, the pulse may be slower than normal. The abdomen is very apt to be somewhat tympanitic. With the patient lying flat on his back, there is often some tenderness and less often muscular rigidity over the right upper quadrant. By making equal and simultaneous pressure with the thumbs under each costal margin after the patient has taken a long breath, it may be possible to elicit greater sensitiveness on the right side. Another method[3] is to strike just below each costal margin with the ulnar border of the extended hand.

Laboratory Tests

Of the laboratory tests, the examination of the urine for the presence of bile and of the stools for its absence are the oldest and still the most important; and here the evidence of the naked eye is usually all that is necessary. The galactose tolerance test is the simplest and perhaps the most useful in determining liver damage. The van den Bergh reaction is chiefly of value in recognizing the type of jaundice.

X-Ray Examination

In the diagnosis of cholecystitis, by far the most important supplement to a careful history and physical examination is the x-ray. Approximately 30 per cent of gallstones can be shown by a carefully taken flat plate alone[4], but with the gallbladder dye this proportion should be increased to at least 70 per cent. About 5 per cent more can be added if a film is taken with the patient in the upright position, after he has remained upright long enough to allow the heavier dye to settle to the bottom, with the lighter bile above[4]. The stones may then be found in the zone between these two layers.

A diseased gallbladder, without stones, is not visualized normally after the dye is given; it is either not seen at all or gives a light shadow. Delayed emptying after a fat meal is also considered pathological, but this is not nearly so significant as failure to obtain normal visualization.

Before accepting too willingly, however, an x-ray diagnosis of a non-functioning gallbladder, one should be quite certain that the patient took the dye, that he retained it, and that he did not eat a fatty meal afterward. If he vomited or had a profuse diarrhea shortly after taking the dye, it may not have been absorbed in sufficient quantity to outline the gallbladder. Most x-ray men now, I believe, give enough paregoric to ensure retention of the dye. Too much fat with the evening meal may cause the dye to leave the gallbladder before the film is made. On account of the frequently severe reactions following the intravenous use of dye, that method has largely been abandoned, though some claim that it is superior to the oral administration. In one patient of mine, removal of a "non-functioning" gallbladder was advised, because of failure to visualize it. The failure was explained when the patient showed me what felt like a plaster cast of a foot-long section of his median basilic vein.

Summary

In closing, I would like to emphasize that, while the laboratory and especially the x-ray are very important aids in the diagnosis of cholecystitis, the final decision must be based upon the clinical history and examination. There is no other medical problem that requires more seasoned clinical judgment than does the correlation of the history, the examination, the laboratory and the x-ray findings in the diagnosis and treatment of chronic gallbladder disease.

3. Method used by David Riesman, as related by F. R. Taylor.
4. Rousseau, J. P.: Personal communication.

The Importance of a Clinical Examination. — A physician who says he has not time to make a clinical examination, has not time to practice medicine. The prescribing of remedies which do not remedy any more than the various patent medicines, or the application of physical methods of treatment when not indicated, or the creation of an air of mystery is not the practice of medicine.—Warner S. Bump: Medical Opportunities in a Small Urban Community, Wisconsin Medical Journal, 39:978 (November) 1940.

THE DIFFERENTIAL DIAGNOSIS OF CHOLECYSTITIS

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I can do little more in the time allotted me than give a list of the various conditions which can be and sometimes are confused with cholecystitis. I believe it would be wise to divide this subject into two parts: first, the differential diagnosis of acute cholecystitis, and second, of chronic cholecystitis. The conditions which may so closely mimic acute cholecystitis as to cause difficulty in diagnosis are as follows:

(1) Acute appendicitis.
(2) Acute right renal disease, including pyelitis, infected hydronephrosis, impacted stone and abscess.
(3) Ruptured or perforating peptic ulcer.
(4) Acute hepatitis, including catarrhal jaundice, liver abscess and the like.
(5) Acute pancreatitis and more rarely chronic pancreatitis or carcinoma of the pancreas.
(6) Acute upper intestinal obstruction, including mesenteric thrombosis.
(7) Hemolytic crises of hemolytic jaundice.
(8) Acute right basal pulmonary disease.
(9) Coronary thrombosis.
(10) Gastric crises of tabes.
(11) Herpes zoster.
(12) Black Widow spider bite.

How can these various pathological conditions involving so many different structures possibly be confused with acute cholecystitis? The answer to this question lies in the fact that they are often characterized by upper abdominal or even right upper quadrant pain, varying degrees of tenderness, rigidity, nausea and vomiting. The pain may be referred to the back or to the right shoulder, and fever, leukocytosis and jaundice may all supervene.

A detailed consideration of these various conditions is neither necessary nor possible. We all know that the tenderness of appendicitis can usually be localized to the middle or lower abdomen and that of renal disease to the costo-vertebral angle. We know that urinary findings are frequently diagnostic. We know that an x-ray plate taken in the erect position will often show free air in the peritoneal cavity in cases with ruptured ulcer, or loops of small bowel distended with gas and fluid in cases with small bowel obstruction. Our judgment is apt to be reasonably sound in such cases, but when it comes to a consideration of acute hepatitis, many errors are still made. There is a prevalent belief in the mountain sections of this state that pain plus jaundice invariably spells cholecystitis with stones. Catarrhal jaundice is thought to be due to a plug of mucus obstructing the common duct.

Acute pancreatitis is another frequently mis-diagnosed condition. Almost invariably it is called biliary colic or acute cholecystitis. Of course, in the fulminating cases of hemorrhagic or necrotic pancreatitis a correct diagnosis is based upon the terrific intensity of epigastric pain with radiation towards the left and to the back, the state of shock with rapid pulse, low blood pressure, and cyanosis, and the lack of fever and abdominal rigidity. Milder cases mimic acute cholecystitis so perfectly as to be clinically indistinguishable. Of course, the two conditions frequently co-exist; but in many instances, nothing but pancreatitis is found at operation. Since these milder forms of pancreatitis go on to resolution without surgery, it is important that they be recognized preoperatively. A higher threshold of suspicion for this disease, plus the routine use of the blood amylase determination will serve to uncover many an otherwise unsuspected case.

As far as the differential diagnosis of coronary thrombosis, pneumonia, gastric crises and herpes zoster are concerned, it goes without saying that rarely is the need for surgery so imperative that one cannot take time to check the blood pressure and assay the condition of the circulatory system. One can, without criticism, delay the operation long enough to uncover the patient's chest, observe the type of respiration and even pass the stethoscope here and there over the lung fields. A patient with gastric crises or herpes zoster will rarely be subjected to exploration if the examining physician will use but two or three of his five senses in making a decision. I now have a patient who was explored within an hour of his admission to a hospital during an attack of gastric crisis. Such unseemly haste is rarely necessary unless the picture is unequivocally that of an acute surgical emergency. It seems to me that our first effort, in the differential diagnosis of cases simulating acute cholecystitis, should be to decide as promptly as possible whether the problem is one for immediate

surgery or one for medical management. If we make this decision promptly and correctly, we have discharged a large part of our obligation to the patient.

Now as far as chronic cholecystitis is concerned, the following conditions must be considered in differential diagnosis:

(1) Duodenal ulcer.
(2) Chronic or recurrent appendicitis.
(3) Chronic right renal disease.
(4) Subacute hepatitis or cirrhosis.
(5) Chronic pancreatitis and carcinoma of the pancreas.
(6) Chronic gastritis.
(7) Disease of the dorsal spine.
(8) Nervous indigestion.
(9) Irritable colon syndrome.
(10) Fatigue or occupational ache.
(11) Migraine.

Many of these conditions may give rise to a low grade indigestion characterized by epigastric distress, fullness or vague pain soon after the ingestion of food. Episodes of epigastric colic with nausea, vomiting and even a little fever and jaundice may occur, or there may be right upper quadrant ache or pain with associated subscapular distress. I propose to say nothing about the organic conditions such as ulcer, appendicitis and hydronephrosis; it is axiomatic that they must be differentiated from chronic cholecystitis. I do wish to say a few words about that large group of patients who suffer from functional disease simulating cholecystitis. I can honestly say that more than 50 per cent of patients referred to me because of suspected chronic gallbladder disease prove to have no evidence of cholecystitis whatsoever. These are the biologically substandard people, obviously nervous and exhausted. They sleep poorly and awaken from sleep more tired than when they went to bed. They are usually constipated, suffer from headaches, anorexia and bad taste in the mouth. They have dull soreness or burning discomfort in the right upper quadrant. They have multiple complaints and are harassed by an overload of worry and work. Many have had appendices, ovaries and adhesions removed without benefit. Cholecystograms often show a dye-filled gallbladder that empties slowly and incompletely after the fat meal. What I wish to emphasize is that these people should not be operated upon. Rarely, if ever, are they relieved of their symptoms. They would do better to spend their operative fee on a vacation away from home and family, or on a few weeks' stay in a rest sanatorium. All too frequently their symptoms are intensified by cholecystectomy and they wander hopelessly from doctor to doctor and finally to the quack.

Before closing this discussion I should like to mention fatigue or occupational ache. During the current year, I have seen two women with this condition. Both were referred to me because of "gallbladder disease." They complained of right upper quadrant and right subscapular pain of a dull, aching quality. One had no indigestion until she was told she had cholecystitis; then she promptly developed nervous indigestion. The other had a marked disturbance of digestion which disappeared entirely during a stay at the beach in an American Plan hotel where she ate everything on the menu in order to "get her money's worth." Both of these women were telephone operators and spent long hours, under constant nervous tension, sitting erect in poorly designed chairs which gave no support to the back. They used their right arms constantly while completing connections. Small wonder that they developed fatigue in the right side of the upper body! Both were relieved of symptoms by an explanation of the mechanism of their production, with adequate support to the back during working hours.

In conclusion, I wish to state as emphatically as possible that a good practical rule to follow in these patients with a chronic cholecystitis syndrome is to advise operation rarely, if ever, unless careful investigation has disclosed undoubted evidence of frank organic disease of the gallbladder. The degree of relief of symptoms from cholecystectomy is in direct proportion to the severity of pre-operative symptoms. Those who possess stones and have had frank gallbladder colics are almost entirely relieved by operation. Those who merely belch and complain of vague distress usually continue to do so after cholecystectomy.

Mind and Body.—In all your patients whose symptoms are of functional origin, the whole problem of diagnosis and treatment depends on your insight into the patient's character and personal life, and in every case of organic disease there are complex interactions between the pathologic processes and the intellectual processes which you must appreciate and consider if you would be a wise clinician.—Francis W. Peabody: Doctor and Patient, New York, The Macmillan Co., 1939.

THE MANAGEMENT OF CHOLECYSTIC DISEASE

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The Management of Cholecystic Disease

For convenience, a discussion of the management of cholecystic disease may be considered under three headings: (1) acute cholecystitis, (2) chronic cholecystitis without stones, and (3) chronic cholecystitis with stones. In the limited time at my disposal only a brief outline of the general principles of treatment will be discussed.

Acute Cholecystitis

For many years, the profession has felt that acute cholecystitis, in the usual case, should be treated conservatively. Bed rest, sedation, heat locally (but some prefer the ice bag), and fluids, either by mouth or parenterally, are all indicated. After subsidence of the attack, cholecystectomy is usually recommended. In empyema of the gallbladder, once the diagnosis has been made, operation should be performed at once, removing the gallbladder if possible.

In recent years, however, there has been a tendency to advise cholecystectomy in the acute case, provided the patient is seen early. Whenever this subject is discussed, I am painfully reminded of a patient seen several years ago who had an acute gallbladder attack. Both the surgical consultant and I agreed to treat her conservatively; she failed to improve, and finally developed signs of peritonitis. At operation she was found to have a perforated gallbladder, a stone having eroded its wall, and needless to say she failed to recover. Since then I have been much more inclined toward early operation. I do not for a moment imply that all patients with acute cholecystitis should be operated upon at once, but in certain selected cases cholecystectomy is indicated and may well prove to be a life-saving procedure.

Chronic Cholecystitis Without Stones

The treatment of gallbladder disease in the absence of acute cholecystitis or biliary colic has long been a subject of vigorous debate. There was a time, not so long ago, when many favored cholecystectomy—or, at least, surgical drainage of the gallbladder. However, it has become more and more apparent that many of these patients have not been relieved by operation; indeed, some have become much worse, and, generally speaking, operation for chronic gallbladder disease in the absence of colic has fallen into disrepute.

Since operative interference in this type of case has proven so unsatisfactory, the question naturally arises, "What does the internist have to offer?" Before answering this question it should be pointed out that the symptoms of chronic cholecystitis are extremely variable; that one patient may complain of gas and fullness after heavy meals; another of vague discomfort if not actual pain beneath the right costal margin; another of heart burn, eructation and so forth. It is recognized that many patients whose gallbladders appear to be normal by x-ray may present exactly the same picture as the so-called "typical gallbladder syndrome", and it is also known that many patients who at operation or at autopsy have a chronic cholecystitis may have had no symptoms whatever referable to the gallbladder. Since these are well established facts, one wonders if the symptoms observed in patients having x-ray evidence of gallbladder disease are in reality due to this disease or to other factors.

The medical management of gallbladder disease is largely a matter of treating the patient symptomatically—a problem in treatment of the patient rather than of the disease. There are several aspects of therapy to be considered: (1) diet, (2) daily routine, (3) drugs, and (4) duodenal drainage.

Diet: The diet in the treatment of gallbladder disease is important. If the patient is overweight—and most of them are—a reduction diet is indicated. In general one should avoid fried, greasy, and obviously indigestible foods; but it is unnecessary and unwise to attempt to eliminate fats altogether. It should be borne in mind that fats in the duodenum are the best stimuli known to gallbladder contraction. A well-balanced bland diet, including a variety of meats and green vegetables should be insisted upon.

Daily Routine: Regularity of habits of eating (small meals at the same time each day) is important, and some exercise and recreation are indicated. Avoidance of fatigue is desirable, and particularly avoidance

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of nervous strain, as it is well recognized that gallbladder attacks frequently follow increased nervous tension. A careful regulation of the bowels is, of course, of the greatest importance, but it should be accomplished by correct habits, not by drugs.

Drugs: It is my belief that drugs have very little place in the treatment of the average patient. Mild laxatives may be necessary occasionally, or even small doses of sodium phosphate. Bile salts are of no particular value, except when given along with vitamin K in jaundiced patients. An ounce of olive oil once or twice a week frequently is beneficial. For attacks of vague discomfort or a low "grumbling pain" beneath the right costal margin, one should try heat and antispasmodics, such as atropine, nitroglycerine or calcium gluconate intravenously.

Duodenal Drainage: Duodenal drainage may afford marked relief in some patients, but there is some doubt as to the mechanism of action of this procedure. Possibly the improvement in the patient's sense of well being is due to emptying of the gallbladder, but again the whole thing may be psychogenic. At any rate, it is excellent psychotherapy and a procedure which should not be discarded.

Chronic Cholecystitis With Stones

As has been pointed out earlier in this discussion, gallstones frequently are found at operation or at autopsy in patients who have never had an attack of colic or even of any digestive disturbances which could be attributed to the gallbladder. Therefore, the removal of gallbladders just because stones are demonstrated is hardly justifiable. If, however, the patient has been having recurrent attacks of colic, then cholecystectomy is obviously indicated. Occasionally one is required to treat such patients when operation is refused or contraindicated for some other reason. The same principles apply as in cases of acute cholecystitis—namely, heat locally, antispasmodics, sedation (not morphine unless pain cannot be controlled with antispasmodics), and intravenous glucose.

In conclusion, it should be emphasized that the management of cholecystic disease is an individual matter; that no set rules can be laid down for the handling of every case; that each patient constitutes his own particular problem and the therapy advised will be determined by a careful consideration of all the factors present.

THE PSYCHONEUROSES

FREDERICK R. TAYLOR, M.D., F.A.C.P.

HIGH POINT

A psychoneurosis is a symptom-complex arising from a fixation of emotional reactions. The symptoms may be mental, such as preoccupation, anxiety, or failure of concentration; or physical, such as faintness, vomiting, palpitation, etc. The shorter term "neurosis" often is used synonymously with "psychoneurosis". A psychoneurosis differs from a psychosis in that it occurs in people who live in the same intellectual frame of reference as their neighbors, whereas in a psychosis there is always some region of thought where phantasy has become reality. (Ross).

The psychoneuroses are not simply common; they are practically universal in human experience. They probably become severe enough to be of significance to the physician in about 75 per cent of adults and in a somewhat smaller percentage of children. My office records covering a period of over twenty-five years show that the three diagnoses I most frequently make are eyestrain, dental disorders and psychoneurosis. The three run a close race. Patients with psychoneuroses often have physical defects, too, which may require treatment. In diagnosis we have a dual question to answer. What kind of disease does the patient have, and what kind of patient does the disease have?

Every healthy person has emotional reactions, and often these show definite physical manifestations. The dejected expression, the tears, the convulsive sobs of grief are actual physical functional changes. So are the facies and palpitation of fright. Disgust may cause nausea and vomiting. Actual unconsciousness (fainting) may result from emotional causes. These physical states are real facts. Moreover, sensory disturbances of many kinds also arise from emotional causes. It might seem foolish to emphasize this were it not for the fact that all too often we hear doctors make some utterly asinine

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In this paper, read before the North Carolina Regional Meeting of the American College of Physicians held at Chapel Hill, October 12, 1940, I have drawn freely from the chapter on "The Psychoneuroses" by T. A. Ross in volume VII of the *Oxford Loose-Leaf Medicine*, but have made alterations and added considerable material based on my own experience. Volume VII of the *Oxford Medicine* is also published separately as a bound volume by the Oxford University Press under the title "Psychiatry for Practitioners". I recommend it as the most generally useful work on the subject for the internist and general practitioner that I know.

statement, such as, "His headaches are imaginary." *Symptoms* are *never* imaginary. If I say I have a headache, I am either stating a fact or telling a lie; I am not imagining I have a headache. Imagination, however, may, and often does cause a misinterpretation of the meaning of symptoms. I may have a headache and imagine that it is due to a brain tumor, and worry over the imaginary tumor may make me a very sick man; but the *symptom*, the headache, is not imaginary.

In the normal person, symptoms due to emotional causes are transitory. Any of us may get temporary palpitation from fear, or a headache from anxiety, etc. We must now inquire why such symptoms persist or recur for days, weeks, months or even years in the psychoneurotic. There are three explanations for this:

1. Because they are dreaded. Fear is one of the most potent forces in life—far more potent than most of us like to acknowledge. The patient may dread an emotional reaction because it is very uncomfortable in itself or because of some supposed danger which he believes threatens him. All too often the physician may be a factor in causing this fear, in one of two ways. Let us take a purely neurotic palpitation as an example. The doctor may not understand this and may warn the patient that he must be careful not to overtax his heart. The patient, therefore, fears to exert himself. At times, however, he has to exert himself to some degree, and his fear of damage from the exertion liberates adrenalin, as fear always does. This causes more palpitation, which in turn convinces the patient that something is seriously wrong and creates greater fear. There may be no end to such a vicious circle. Ross cites such a case that persisted for twenty years, and then was cured by changing the patient's beliefs about the significance of his symptoms. On the other hand, the doctor may tell the patient that nothing is wrong —a statement which the patient knows to be untrue just as certainly as a child knows it is untrue if a doctor tells him it won't hurt when he gives him antitoxin. Such a statement to a neurotic either disgusts him or convinces him that his physician does not understand his case, or perhaps does not believe his statements about palpitation. This causes despair, and the fear that nothing can be done for him, and *this* fear makes the trouble persist. He should be told the *truth* that there is nothing organically wrong with his heart, but not the *falsehood* that there is nothing wrong with his nervous system and the resultant functioning of his heart.

2. Symptoms due to emotion may persist in the neurotic because of a *conditioned reflex*. When a puppy has once tasted meat, his saliva flows at the smell or sight of meat —a *simple* reflex. If, however, every time the puppy is given meat a bell is rung, after many such experiences the simple ringing of a bell makes the saliva flow in the absence of meat—a *conditioned* reflex. We may even condition a conditioned reflex. For example, if, in the case just cited, we flash a light in the puppy's eyes every time the bell is rung, eventually we may discard the bell and make the saliva flow by means of the flashlight alone. Such conditioned reflexes often explain apparently irrational human actions. Professor Bernard Hart was walking with a friend one day when certain chimes, famed throughout England for their beauty, began to play, causing great irritation in his friend. Soon Dr. Hart unearthed this perfectly logical explanation of his friend's otherwise amazing reaction. He had published some verse of little merit which a reviewer had condemned mercilessly, contrasting it with some excellent verse by a clergyman. This caused a reaction against clergymen in general, and, indeed, against the church and all its works. Anything which even subconsciously reminded him of the humiliating review of his verse enraged him.

3. Symptoms may persist because there is some advantage in being ill. We must emphasize at once that the true psychoneurotic is not conscious of such an advantage. It is to his subconscious mind that it makes its appeal. Indeed, as we shall see later, bringing the matter into clear consciousness is the most valuable means at our command to cure the patient. Subconscious activity is seen most obviously when we see someone walking in his sleep. Some part of his mind below the conscious level takes charge and controls his actions. Somnambulism, however, is an exceptional form of subconscious activity. Our daily habits display the ordinary form. I may start to see a patient beyond the hospital, but when I reach that institution I may turn in through force of

habit, before I realize consciously what I am doing.

We must distinguish very sharply between malingering, a rather rare condition, and psychoneurotic manifestations, which are exceedingly common. Even in damage suits, where malingering is notorious, it is far less common than the subconscious desire for advantage. In the war, as pointed out by Ross, there was much malingering, but many escape mechanisms were not malingering. Some men for months at a time kept up a violent coarse tremor of their arms. As a conscious act of malingering, this would be impossible; fatigue would make them stop to rest. Yet, once they were discharged from the army, the tremor stopped very soon, because the emotional strain was removed.

Ross points out that in civil life, apart from compensation cases (and I would add childish pranks), malingering usually is evidence that a patient feels himself to be in a very tight place. A certain patient's room was on the ground floor. His physician saw him through a window sitting in his chair reading a paper; however, when he was admitted to the patient's room he found the man in bed writhing in pain. The patient said he had been that way for half an hour—a statement which was obviously a lie. He had been very thoroughly examined by modern methods, and no organic trouble was found. However, three weeks later he was dead from cancer of the pancreas. He had exaggerated his suffering in a vain effort to make his doctor understand his condition.

Let us return, however, to the psychoneurotic. Some serious difficulty may exist in a home or a business. The psychoneurotic breaks down under it and suffers real and often very distressing symptoms. He is sent to a hospital, and always improves; but on returning home he gets worse again if the difficulty remains. This is an escape mechanism. In the hospital he does not have to face the difficulty. He does not enjoy being sick—no one does who suffers what the psychoneurotic goes through—but he finds those symptoms less intolerable than the difficulty at home or in business. This process, however, is not a conscious one.

Many emotional reactions were useful in the past and will be again if civilization breaks down. Let us take our old symptom of palpitation. Until recently, what did man fear? Unemployment? A break in the stock market? No. He feared physical attack from other men or animals, necessitating adrenalin to cause palpitation and deliver blood, oxygen, and sugar to the muscles in excess, so that he could fight or run long and hard. But under civilized conditions, there is no one to fight and no place to run, so the adrenalin simply causes palpitation, as racing the motor of an automobile while the car is standing still merely shakes the car and does harm rather than good. Insomnia, too—that horror of the psychoneurotic—was once invaluable. If a man was in danger of physical attack, he had *better* stay awake on guard if he wished to live. But now, staying awake just wears him out—more from the worry it causes than from loss of sleep. What is the difference between the insomniac psychoneurotic who requires a couple of hours to get to sleep and von Humboldt, who at the age of 80 complained that he no longer had any time to work, as he required four hours of sleep? There are some physical differences, no doubt, but one of the most important differences is that von Humboldt was interested in everything under the sun except Humboldt, whereas the psychoneurotic has narrowed his interest down to himself.

What about overwork as a cause of the psychoneuroses? It is very often unjustly blamed for them. The student breaks down on the eve of examinations, but it is from worry, rather than work. Some students collapse nervously after examinations, but almost never those who pass. Business men "crack up" from worry, rather than from work. Sometimes the worry has nothing to do with business. A man claimed he broke down from overwork, but soon afterwards ran off with another man's wife. The emotional conflicts involved were responsible, not overwork. A country practitioner and philosopher, Dr. William N. MacCartney, in his fascinating book OBSERVATIONS OF A GENERAL PRACTITIONER, remarks that there are two reasons for almost everything we do—a good reason and the real reason. The good reason (but alas, untrue) for the breakdown of the man just cited was overwork. The real reason was getting involved with another man's wife.

There seems no limit to the variety of symptoms, mental and physical, which may afflict the psychoneurotic. Certain manifes-

tations, however, require special analysis. We have already discussed insomnia. The activation of certain childhood fears is frequent. Most of us have our "pet aversions", many of which are based on childhood experiences. A child reared in a family which, at the approach of a thunderstorm, pulls down all window shades and sits on the stairs with ears stopped up, is very likely to grow up with a phobia for thunderstorms. If, in addition to this, he has a narrow escape from lightning, the phobia will probably be a severe trial to him throughout life. Please note that a phobia is not a reasonable fear, such as fear of being run over if you don't look before crossing a street, or fear of being struck by lightning if you seek refuge under an isolated tree, but is based entirely on an emotional reaction that is not amenable to reason. The fear is out of all proportion to the danger. The common unreasoning fear of perfectly harmless snakes often is due to childhood training, and may, in some cases, be due to a subconscious association of snakes with powers of evil, based on the Garden of Eden story.

Many fears are not phobias, but rational fears based on the psychoneurotic's misunderstanding of the nature of his own case. The fear of insanity is very prevalent and devastating in certain psychoneuroses. Worry prevents concentration and the fixing of things in the memory; hence memory often fails at most inopportune moments. Such a failure of memory may make one think he is going mad. Explanation will cast out such fears.

One reason (there are many others) why sex plays such a part in psychoneuroses is because many children are taught that all sexual ideas are wrong. This is due to unintelligent or misguided ideas of education. Sex is one of life's most potent forces. Sexual ideas are bound to occur with force and frequency. The child should be trained to regard these as natural and normal, and taught how to control them properly and divert his thoughts actively into channels of constructive activity. If, however, he has been taught that the most fleeting sexual thought is essentially and grossly sinful, he will be tortured with continual emotional conflicts that will prepare the way for a nervous breakdown.

Nervous indigestion due to emotional causes is exceedingly frequent. Every doctor who has not read Alvarez's great little classic[1] on that subject should do so. I wish to quote from it a profound truth that is too little appreciated by many physicians: "It is a curious fact . . . that patients with large cancers gnawing at their vitals are slow to complain. Many go about their business until they are too weak to get out of bed, and many seek relief only when forced to do so by their relatives. When the physician tells such a person, as he so often has to do, that it is too late for operative removal of the growth, and that there is little that can be done, the answer is generally a brave one. I have never heard such patients complain or rail against fate. Often they say: 'It is no matter; I have lived my life, my children are grown, and I am ready to go.'

"It is always somewhat of a shock and an annoyance to turn, sobered, from such an interview to the consideration of the endless complaints of someone who can show no sign of organic disease, who perhaps has every comfort in life, and who yet complains that his cross is greater than he can bear, and perhaps there is some extenuation for the physician who loses patience and scolds. *The truth of the matter probably is that nervous patients commonly do suffer more intensely and more continuously than do persons with organic disease. There is no question that the symptoms that accompany a nervous breakdown are real, and there is every reason to believe that a greatly increased irritability of the nervous system should cause much suffering.*" [Italics mine].

One of the most important symptoms in the psychoneuroses that must be understood and explained to the patient is the feeling of exhaustion, which may be very disabling, even though true exhaustion is not present. It is ridiculous to suppose that taking a few steps across the floor could cause weeks of physical exhaustion, yet some psychoneurotics believe just that. Overemphasis on the "rest cure" is in some measure responsible for this. What do we mean when we speak of "nervous exhaustion"? Let us consider the meaning of the term "exhaustion". We can picture a mill dam that is completely drained so that the water power is totally exhausted, or a battery that is entirely run down so that the electromotive force is exhausted, or a bank account without funds so that there is financial exhaustion. But

1. Alvarez, Walter C.: Nervous Indigestion, New York, Paul B. Hoeber, Inc., 1930, p. 115.

we can also picture a dam full of water that has the sluice gate stuck so that we cannot release the stored-up power, a battery fully charged with a broken connection, a bank account containing money but no check-book at hand. *Until we can raise the sluice, get an electric connection, or procure a check, we shall be as totally devoid of these forms of power—water, electric or financial—as if the power were truly exhausted.* So in the "exhaustion" of the psychoneuroses. Fear is usually the factor that incapacitates us from releasing power that is there, and we are as devoid of strength as if it were not there. Let us examine a normal phenomenon that may also throw light on this problem. An army is marching along a road on a hot day. The men are dropping out from so-called exhaustion. Every officer knows that the best way to stop this is to have a band strike up some lively music. The band does not and cannot create energy in the tired men. It releases energy that is already there but that is locked up, as it were, by the monotony of marching. The emotional response to the monotony is a feeling of exhaustion, but once the monotony is relieved by the music, the "exhaustion" disappears. Kipling has expressed this monotony of marching better than anyone else in his amazing study of a psychoneurotic state in his poem "Boots" (from SOUTH AFRICAN SERVICE SONGS). Here it is:

BOOTS

We're foot—slog—slog—slog—sloggin' over Africa!
Foot—foot—foot—foot—sloggin, over Africa—
(Boots—boots—boots—boots—movin' up and down again!)
There's no discharge in the war!
(Eccles. viii: 8)

Seven—six—eleven—five—nine-an'-twenty miles today—
Four—eleven—seventeen—thirty-two the day before—
(Boots—boots—boots—boots—movin' up and down again!)
There's no discharge in the war!

Don't—don't—don't—don't—look at what's in front of you
(Boots—boots—boots—boots—movin' up an' down again);
Men—men—men—men—men go mad with watchin' 'em,
An' there's no discharge in the war!

Try—try—try—try—to think of something different—
Oh—my—Gawd—keep—me from goin' lunatic!
(Boots—boots—boots—boots—movin' up an' down again!)
There's no discharge in the war!

Count—count—count—count—the bullets in the bandoliers:
If—your—eyes—drop—they will get atop 'o you
(Boots—boots—boots—boots—movin' up and down again!)
There's no discharge in the war!

We—can—stick—out—'unger, thirst an' weariness,
But—not—not—not—not the chronic sight of 'em—
Boots—boots—boots—boots—movin' up an' down again,
An' there's no discharge in the war!

'Taint—so—bad—by—day because o' company,
But—night—brings—long—strings—o' forty thousand million
Boots—boots—boots—boots—movin' up an' down again,
There's no discharge in the war!

I—'ave—marched—six—weeks in 'ell an' certify
It—is—not—fire—devils—dark or anything
But—boots—boots—boots—movin' up an' down again,
An' there's no discharge in the war.

War has taught us that total exhaustion is rather unusual. Consider the retreat from Mons. The British army marched and fought with almost no sleep for a week. Then it slept thirty-six hours while it was covered by another friendly army. Then it plunged into the battle of the Marne and went right on through into the battle of the Aisne. Note these two points: recovery from fatigue was rapid (in 36 hours), unlike the fatigue of nervous exhaustion; and the exhaustion did not become imperatively operative until the army was safe. Had it not been safe, it would have struggled on as did Napoleon's army in the retreat from Moscow. Many fell out, but the majority showed that total exhaustion is largely a psychological affair; it does not arise as long as there are urgent reasons why is should not.

Nervous exhaustion is often an escape mechanism—subconscious, of course. Unpleasant duties and situations may be escaped by such tricks played on us by our subconscious selves.

Finally, a few words on the treatment of psychoneurotics. It is foolish to dismiss them with the advice to exercise their wills, pull themselves together, brace up, keep the chin up, etc. All psychoneurotics are told that, but without benefit. The will is much like an automobile starter. It is very necessary and has to be used frequently. At the moment I wish to read a rather seductive detective story. Duty dictates, however, that I write this paper. I make one effort of will to do this, just as one steps on the starter of a car to get going. If, however, I found myself stopping in the middle of every sentence to gaze wishfully at the de-

tective story, this paper would be even worse than it is; I could do no work of any consequence whatever. I could do some work by constantly pulling myself together and driving myself, but it would be work of inferior quality. So one can throw a car in gear and step on the starter and drive it a few yards; but, except in some emergency, it is bad practice and wears out the machinery. If, after I make an effort of will to sit down and go to work, the work does not go on of itself, something is wrong and needs attention. So don't tell the psychoneurotic to keep pulling himself together until he wears himself out, but try to find out and correct what is wrong.

To do this takes a great deal of time. Ross says that the longest history he ever took required forty hours. Alvarez once found ten days of insistent questioning necessary before he could elicit the truth that had to be brought out before the patient could be cured. Such cases are relatively rare, but it is not unusual to have to take from two to four hours in examining a psychoneurotic. Whether this is done at one or more sittings is optional, depending on the amount of time available and the endurance of physician and patient; but certainly the first sitting in the average case should not take less than an hour, and when the time is available, I prefer to take from one and a half to two hours, if the patient is not too fatigued thereby. If the patient wants to talk, let him talk himself out. Much irrelevant material may be dismissed, but hints will be obtained that will serve as leads to the solution of the problem. Then start a systematic history and physical examination. Thoroughness here gives the patient a sense of trust in his doctor. After this is completed and the necessary laboratory tests performed, the technique will vary. Usually I tell the patient that I know his symptoms are very real and very distressing, but that they are on an emotional basis, and I attempt to explain to him, much as I have tried to do in this paper, how emotional disturbances cause physical symptoms. Once he sees this he is ready to cooperate by telling his story. Often there is a situation the doctor is powerless to relieve. A billion dollars might have helped considerably to relieve the loss of homes, jobs, etc., during the depression, but the doctor cannot supply such relief. However, if he can show the patient how the situation has produced his symptoms and get him to understand himself, often the most desperate situation is robbed of its psychoneurosis-producing power, and the patient is cured. Needless to say, all physical strains on the nervous system should be corrected, if possible, too. Eyestrain I find especially important. However, I tell the psychoneurotic that the understanding of his condition is the most important thing, and that new glasses can at best merely remove an additional source of strain, so that he will be in better shape to face his other difficulties.

What about placebos? I am unalterably opposed to them except in the case of a patient who is too ignorant to understand even the simplest explanations of the effect of emotional disturbances on the body. I know of one patient who was supposedly cured by having a practically normal cervix cauterized by a gynecologic enthusiast. Her real trouble was that the depression had forced her husband to work far away from home, and she was lonely and discouraged. However, the gynecologist had a good deal of self-assurance and gave her a "good reason", as she thought, for her trouble, rather than the real reason, and the treatment was really a superficial form of psychotherapy. It cured her of her symptoms for the time being, but fixed in her mind the idea that she had some organic trouble, and this caused a recurrence of her trouble. As a hospital intern I once ordered hypodermics of plain water hourly day and night, plus a bitter mess concocted by the Chief, to a young man with hysterical paralysis and anesthesia. It got him over his symptoms, except for a slight limp, in forty-eight hours, but unfortunately he had been "cured" that way many times before, and such "cures" fixed securely in his mind the idea that he had some disease requiring drastic drug treatment. This practically ensured recurrences of his attacks.

Thoroughness, kindness, sympathy, understanding, and, above all, patience with the psychoneurotic will help much. The psychoneuroses are fascinating, but they are no field for the man whose primary aim is money; for they require much time, and the pay is exceedingly small in an industrial town where so many cases are on an economic basis, being brought about by loss of employment, business losses, etc. We have been so dominated by the German school of pathological anatomists of the past generation that we have forgotten that this knowl-

edge of the power of the emotions over us is thousands of years old. We have become materialized and mechanized. Especially do Americans bow down to machinery. They gladly pay many times more for some simple surgical operation than for a most prolonged, painstaking, and often heart-rending study of some serious emotional situation, a study that leaves the physician exhausted by the burdens of his patient. There are compensations, however. To help where others have failed and to relieve the most distressing forms of suffering are no inconsiderable part of the reward for such work. It makes one feel in closer relationship to those wise men of old who knew the psychoneuroses far better than the greatest pathological anatomists, those men who gave us such priceless pearls of wisdom as these:

> Better is a dinner of herbs where love is
> Than a stalled ox and hatred therewith.
>
> Better is a dry morsel and quietness therewith
> Than an house full of feasting and strife.
>
> Better is an handful with quietness
> Than both hands full with much vexation of spirit.
>
> It is better to dwell in the corner of the housetop
> Than with a contentious woman in a wide house.
>
> There is that maketh himself rich, yet hath nothing:
> There is that maketh himself poor, yet hath great wealth.

The Treatment of Peptic Ulcer.—The following generalizations may be made about the treatment of peptic ulcer, based upon the experience of the Ulcer Follow-up Clinic of the Presbyterian Hospital:

Conservative medical therapy usually controls the symptoms of ulcer promptly and results in healing of the lesion. Medical management is disappointing as a measure to prevent recurrences of the disease in cases seen in the hospital, even if carried out over a long period of time. Surgical therapy should be considered if the risk of operation appears to be outweighed by the prospect of frequent and severe recurrences under continued conservative treatment or if symptoms persist after an adequate trial of medical treatment.

The chief indications for elective surgery are persistent pain under hospital treatment, oft recurrent gross hemorrhages, pyloric obstruction which fails to respond to medical treatment and suspected malignancy in cases of gastric ulcer. Posterior gastroenterostomy yields excellent results in cases of duodenal ulcer with persistent pyloric obstruction, but is not indicated in other types of duodenal ulcer or in gastric ulcer. Subtotal gastrectomy results in a complete and apparently permanent freedom from symptoms in both gastric and duodenal ulcer in a high percentage of cases regardless of whether the indication for operation is persistent pain, recurrent hemorrhage, or obstruction.—Charles A. Flood: Prognosis and Treatment in Peptic Ulcer, J. Indiana State M. A. 34:7 (January) 1941.

PRIMARY PERITONITIS

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CHARLOTTE

In the past all cases of peritonitis were considered to be primary, but as surgical knowledge has increased, cases of peritonitis associated with perforated appendix, perforated peptic ulcer, perforated diverticula, salpingitis, trauma and wounds of the abdomen, etc., have come to be classified as secondary peritonitis. Today, by primary peritonitis, we mean peritonitis of idiopathic, metastatic origin. Such cases are most often seen in children and have a high mortality rate. Following the introduction of serum therapy in some of these cases a few years ago, the mortality rate has been slightly lowered[1]. It is still appalling. With the advent of chemotherapy[2], the mortality rate can be further lowered.

Etiology

The organisms most often the cause of primary peritonitis are pneumococci and streptococci, usually the hemolytic type. Involvement by the tubercle bacillus and the gonococcus should not be classified as primary peritonitis.

Pathology

The mode of entry of the organisms is presumed to be by the blood stream, by the vagina and fallopian tubes in females, by the gastro-intestinal tract, or by the transdiaphragmatic lymphatics.

There are many arguments against the blood stream's being the mode of entry of the organism. The organism can be isolated from the blood in almost all cases of lobar pneumonia, but pneumococcic peritonitis occurs in only ¼ of 1 per cent of pneumonia cases (according to Ralleston[3]). Not all cases occur in girls; hence the genital route explanation cannot apply to all cases. Some of the cases in young females have shown no pelvic peritonitis and no visible infection of the tubes. Vaginal smears are most often negative for the offending organism[1a].

1. (a) Ladd, W. E.; Botsford, T. W.; and Craven, E. C.: Primary Peritonitis in Infants and Children, J.A.M.A. 113:1455-1459 (October 14) 1939.
(b) Dotan, F. J.: A Case of Pneumococcic Peritonitis With Recovery. Ohio State M. J. 35:609-610 (June) 1939.
2. Sager, W. W.: A Case of Pneumococcic Peritonitis Treated with Prontylin, M. Ann. District of Columbia, 7:99-100 (March) 1938.
3. Ingalls, C.: Specific Primary Peritonitis, J. Indiana M. A. 32:688-694 (December) 1939.

Trans-diaphragmatic spread is also controversial; it would explain an infection from the abdomen travelling upward in the direction of the lymph flow, and would better explain an empyema following pneumococcic peritonitis than the origin of the peritonitis from the respiratory tract. Ingalls[3] very ably discusses this in his article.

It may be logical to say that the disease may occur by any one of the routes mentioned, or by more than one route; however, it is very likely that an altered permeability of the bowel wall may be a factor in the etiology[3].

In a series of cases reported in the recent literature, out of 12 cases of pneumococcic peritonitis the blood culture was positive for the organism in 10 cases; in 18 cases of streptococcic peritonitis only 4 blood cultures were positive[1a]. Vaginal smears were less accurate, and throat cultures for the offending organism were almost universally negative[1a].

Age and Sex

The disease is most common in the early years of life, according to a report of 67 cases at the Children's Hospital in Boston. Streptococcic peritonitis is seen most often in infancy, in the first four years of life, and pneumococcic peritonitis occurs usually in childhood between the ages of 2 and 7[1a].

Practically all the series reported a higher incidence of primary peritonitis in girls than in boys. Some observers have called attention to the presence of nephrosis as the possible origin of pneumococcic peritonitis in boys[1a][4].

Mortality

In the literature up to January, 1937, there were reported 308 cases of primary peritonitis (streptococcic), with a mortality rate of approximately 85 per cent[3]. Duncan reports 80 per cent mortality in streptococcic cases and 60 per cent in pneumococcic cases. Ingalls[3] reports 100 per cent mortality in the former, and 50 per cent mortality in the latter condition. In Boston, Ladd[1a] reports a series of 52 cases in which specific therapy was given, with a striking decrease in the mortality rate. Early operation and identification of the organism was employed. In the pneumococcic group serum therapy was used, with a resultant 12.5 per cent mortality; in the streptococcic group sulfanilamide was given, with 28.5 per cent mortality[1a].

Incidence

Hartzler[3] in 1935 stated that he had seen only 160 cases in the literature, of which only 17 cases were authentic in America. Some observers have said that primary peritonitis constitutes 2 per cent of the acute abdominal emergencies in children, but that few more than 300 cases of primary peritonitis are reported in the literature[3].

Symptoms

The onset is most often sudden and severe, with abdominal pain, usually generalized in character, and nausea and vomiting. Diarrhea may be observed and is sometimes profuse; and abdominal distention and tenderness are usually present. Leukocytosis is marked, and the temperature is considerably elevated. Delirium is sometimes present.

Diagnosis

Very seldom is the diagnosis of primary peritonitis made before operation. The condition is most often mistaken for perforated appendicitis with peritonitis. The differentiation is extremely difficult, if not impossible to make. Though appendicitis is infrequent in the early years of life it is sometimes seen. (We had a case within the last few years of perforated appendix and generalized peritonitis in a child approximately 1½ years of age.) It is safer to determine the cause of peritonitis at operation, if the child's condition justifies operation, than to speculate upon its being a primary peritonitis.

Operation

The appendix is most often found to be involved only along with the rest of the peritoneum. The appearance, consistency and odor of the pus will give valuable hints as to the causative organism. The pus should always be sent to the laboratory for smear, culture and typing. The abdomen may or may not be drained, depending on the amount, localization and consistency of the purulent material. It is best always to drain the incision.

Treatment

The usual treatment of peritonitis should be employed — Fowler's position; ample fluids, intravenously, subcutaneously or by

4. Pahmer, M.: Pneumococcic Peritonitis in Nephrotic and Non-Nephrotic Children, J. Pediat. 17:90-106 (July) 1940.

retention enemas; and transfusion if there is anemia present. The importance of the Jutte tube to relieve gastric distention cannot be over-emphasizd. In peritonitis of pneumococcic origin, there is no single therapeutic measure more valuable than the intravenous administration of sodium sulfapyridine monohydrate. There is always the question as to how much sulfapyridine is absorbed in a vomiting patient when taken by mouth, and the question of how much time is being lost. When given intravenously it is immediately available. It could be better employed only if it were introduced into the peritoneal cavity during operation —and this possibly should be done[5].

In streptococcic peritonitis, sulfanilamide should be given hypodermically.

Complications

The most frequent complication of primary peritonitis is empyema[3][6]. Seventy-five per cent of the cases reported in one series had this complication[3]. Pneumonia is present in 25 per cent of the cases[3]. Pericarditis, erysipelas and intra-abdominal hemorrhage have all been reported, and there have been 2 cases reported with definite pelvic abscesses[3].

Comment

The mortality rate of primary peritonitis can be greatly reduced by early operation, with identification of the offending organism, and prompt treatment of the peritonitis by the drugs previously mentioned given hypodermically or intravenously, as the case may be.

Recent Reports

Banks and Joseph[7] reported a case of pneumococcic peritonitis proven by operation and culture which was treated with sulfapyridine given orally, with recovery. This was reported in the *British Medical Journal* of June 8, 1940. In September, 1940, Von Werssowetz and Andrews[8] reported a case of pneumococcic peritonitis from their service at St. Luke's Hospital, London, Ontario, treated with sulfapyridine given by mouth, with recovery. This case was reported in the *Canadian Medical Journal.* The cases that I shall report are, so far as I know, the first to be reported in the literature of this country of pneumococcic peritonitis treated with sulfapyridine.

Case Reports

Case 1. C. F. T., a white female, aged 7 years, was admitted to Mercy Hospital on February 25, 1940. She had been referred by Dr. T. N. Reid.

The child began complaining of abdominal pain in the afternoon preceding admission to the hospital. The pain first began in the umbilical region; it was at first mild in character, but gradually became more severe, associated with slight distention. There was no nausea, vomiting or diarrhea, and no symptoms referable to the genito-urinary tract. The family physician who was called found no particular areas of tenderness or rigidity present. The child did not, at that time, appear to be very ill. He remained with the child for several hours and examined her thoroughly, but no additional facts could be obtained. An enema was given with fair results. Following the administration of ½ grain of codeine she rested well during the night. The next day the patient complained of more pain than before, and the abdomen was more distended. She had vomited a small amount once or twice. The temperature remained below 100 F. orally. There was some generalized tenderness over the abdomen, but no particular areas of tenderness; there was very little, if any rigidity. The patient did not vomit any more. In the course of the next few hours the distention became a little more marked and the patient appeared sicker. Hospitalization was advised, and the patient was admitted to Mercy Hospital.

There was nothing particularly interesting in the past history. The patient had had a normal childhood, with no serious illnesses. There was nothing of importance in the family history.

On physical examination the child appeared acutely ill, with an anxious expression on her face. There was no dehydration, and she appeared well nourished. The face was flushed; there was no rash on the skin; the eyes were bright. The chest was clear and resonant throughout: breath sounds were of normal quality. The abdomen was

5. Lockwood, J. S. and Raydin, I. S.: The Prophylactic Use of Sulfanilamide in Abdominal Surgery, Surgery, 8: 43-55 (July) 1940.
6. Teasdale, J. M.: Pneumococcal Peritonitis with Bilateral Empyema, Brit. M. J. 1:1179 (June 10) 1939.
7. Banks, A. F. and Joseph, G.: Pneumococcal Peritonitis Treated With Soluseptasine and Sulfapyridine, Brit. M. J. 1:931 (June 8) 1940.
8. Von Werssowetz, O. F. W., and Andrews, C. D.: Pneumococcic Peritonitis Treated by Sulfapyridine, Canad. M.A.J. 43:268-269 (September) 1940.

slightly distended and there was tenderness and moderate rigidity present throughout, more marked across the lower abdomen, which appeared a little more distended on the right. Peristalsis seemed to be diminished; there was no bulging in the flanks; no tenderness was elicited over the kidney region; no masses were palpable; and no hernia was present. Rectal examination revealed tenderness high up on both sides; no blood was present. Genito-urinary examination was negative.

The leukocyte count was 44,000, with polymorphonuclear neutrophils 99 per cent, lymphocytes 1 per cent. Urinalysis was negative except for a 1 plus reaction for albumin, 75 pus cells per low power field, and occasional casts.

This case was thought to be an atypical case of appendicitis because of the very high blood count at onset. A diagnosis of perforated appendicitis with generalized peritonitis was made.

At operation free pus was encountered in the peritoneal cavity, with flakes and quantities of plastic exudate. The appendix did not appear to be the causative factor. A culture of the pus, and a smear for typing were sent to the laboratory. Appendectomy was performed and the abdomen was closed with drainage. Because of the appearance of the pus and absence of odor, it was believed that we were dealing with pneumococcic peritonitis. The laboratory soon reported that the organisms on the smear resembled pneumococci. Before leaving the operating room the child was given intravenously 2.5 Gm. sodium sulfapyridine monohydrate without reaction. Normal saline solution was given subcutaneously after the patient was put to bed. Fowler's position was employed. A sulfapyridine concentration test made the following morning showed 7.2 mg. per 100 cc. Sulfapyridine, 7½ grains, was given twice daily by mouth. The laboratory reported that the culture of the organism showed pneumococci Type II.

The child continued to improve, and except for the occurrence of tonsillitis on the sixth day, she made an uneventful recovery. She was dismissed from the hospital on March 17, in excellent condition, with the incision well healed.

Case 2. On the same night another case was admitted to Mercy Hospital by Dr. T. N. Reid, and was referred to Dr. J. P. Kennedy. I saw this patient with Dr. Kennedy and I am indebted to him for a report of this case. Both children lived in the same locality. This child, M. R. G., aged 9, complained of pain in the lower abdomen. The onset of the illness was twenty-four hours before admission, with cramp-like pains in the abdomen. At first the pains were generalized and mild in character, but they became localized in the right side and were associated with some vomiting. There were no genito-urinary symptoms or diarrhea.

There was no history of similar attacks. The family history is of no importance.

Examination revealed a young girl appearing acutely ill, with a temperature of 103 F. The tongue was dry and coated; the skin showed no rash. The chest was clear and resonant throughout. The abdomen was distended, with tenderness and some rigidity over its entirety. Rigidity was more marked on the right side. Rectal examination revealed tenderness high up on both sides; no mass could be detected.

Examination of the urine was negative, except for an occasional pus cell in a catheterized specimen.

The leukocyte count was 27,800, with 92 per cent polymorphonuclear neutrophils.

A preoperative diagnosis of acute appendicitis was made.

At operation the appendix was found to be swollen and inflamed, containing seropus and two large threadworms. The ileum was injected and there were some enlarged mesentery glands present. There was a slight exudate over the small bowel, and the operative area felt slick to the touch. A culture was made of this exudate. The appendix was removed; the abdomen was not drained.

Sulfapyridine, grains 10, was given by retention enema every four hours for the first twenty-four hours; then sulfapyridine, grains 7½, for three days. The elevation of temperature gradually subsided. The report of the abdominal culture was positive for pneumococci but negative for Types I through XXXII.

The child made an uneventful recovery and was dismissed on March 5, 1940. The wound was well healed and the patient was dismissed in excellent condition.

PRENATAL SYPHILIS

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The adequate ante partum treatment of syphilitic women has greatly decreased prenatal syphilis, but the inadequate treatment of such patients has made the disease much more difficult to diagnose by suppressing the manifestations of syphilis in the newborn and decreasing the stigmata of prenatal syphilis.

In making a diagnosis of prenatal syphilis the following facts regarding the mother must be taken into consideration:

1. Mothers with early syphilis, in the majority of cases, will have positive serology. In addition clinical evidence may be found.

2. Mothers infected with syphilis for a number of years may present some difficulty in diagnosis unless tertiary lesions are present. The percentage of positive serological tests is not as great as in younger mothers. It must be kept in mind that, no matter how long standing the disease may be, the patient is still capable of infecting her unborn child irrespective of the Wassermann reaction.

3. A negative Wassermann test in the mother by no means excludes syphilis; the presence or absence of syphilis must be judged by the circumstances in each case.

4. Patients may give a history of previous anti-syphilitic treatment. So-called adequate treatment is by no means an assurance against the mother's infecting the child. The possibilities, however, are remote.

Methods of Diagnosis of Prenatal Syphilis

1. *Blood serology:* A child born of a syphilitic mother may have strongly positive serology at birth. However, a positive Wassermann or Kahn test is by no means conclusive evidence that the child has syphilis. It is a phenomenon that occurs in the newborn children of syphilitic mothers that has not been adequately explained. It is presumed that the reagin crosses the placental barrier from the maternal to the fetal blood. For this reason no child should be treated for syphilis during the first six to eight weeks unless stigmata exist. Blood Wassermann tests should be repeated weekly for six to eight weeks. If the child is non-syphilitic the blood will become negative, or the titer will decrease during this period. However, if the child has syphilis the titer will increase in successive weeks or remain strongly positive from the beginning.

2. *Cord blood Wassermann:* This is a very inadequate method and should never be relied upon in any circumstances. A diagnosis of infantile syphilis should never be made from the results of a single test. Repeated examinations of the mother's blood before delivery and of the child's for several weeks after delivery is more reliable.

3. *Darkfield Examination:*
   a. A cord stump which heals slowly and any suspicious lesion of the skin of an infant should have a darkfield examination. Such lesions usually occur from three to eight weeks after delivery.
   b. Material from the umbilical vein should be examined after the birth in suspicious cases. Take scrapings near the fetal end of the cord for darkfield examination.

Clinical Picture of Infantile Syphilis

One should always keep in mind that for every case of syphilis diagnosed clinically there are at least five discovered by routine serologic tests. A child with prenatal syphilis may show one of three things:

1. Early stigmata of syphilis which correspond to the secondary stage in acquired syphilis.
2. Late stigmata of syphilis corresponding to the tertiary stage.
3. No stigmata, but strongly positive serologic tests. By far the greatest majority fall in this group.

Early Stigmata of Congenital Syphilis

The early stigmata correspond to the secondary stage in acquired syphilis; all of these are seen under the age of 5 years, and most of them in the first few months of life.

1. Snuffles (syphilitic rhinitis).
2. Skin manifestations:
   a. The most frequent lesions are maculopapular, involving part or all of

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the body, practically always the soles and palms.

b. Bullous lesions are occasionally seen.

3. Condylomata, involving the regions that are moist and where the skin is thinnest (anal and genital regions).

4. Fissures about the mouth and lips. Later these leave scars and are called rhagades.

5. Mucous patches (more frequent in the nose and throat).

6. Persistent jaundice in the newborn.

7. Bleeding (abnormal bleeding not associated with a blood dyscrasia).

8. Enlarged liver and spleen.

9. Meningitis. If it is untreated a moderate hydrocephalus follows.

10. Bone changes as demonstrated by x-rays:

a. Osteochondritis (5 wk.).

b. Osteopsathyrosis.

c. Epiphysitis } pseudoparalysis

d. Periostitis (5 mo.) } and pain on motion.

e. Dactylitis (under 6 mo.).

11. Miscellaneous:

a. Weight loss.

b. Absent eyebrows.

c. Hepatitis.

d. Testicular, epitrochlear and general glandular enlargement.

e. Pneumonia alba (seen in stillborn infants).

Late Stigmata of Prenatal Syphilis

The late stigmata correspond to the tertiary stage in acquired syphilis; all of these are seen after the age of five years.

1. Interstitial Keratitis.

Other eye manifestations are chorioretinitis, choroiditis, iridocyclitis, Argyll Robertson pupils, ptosis, diplopia and dimness of vision.

2. Clutton's joints—a symmetrical, usually painless intermittent hydro-arthrosis of the knee joint (other joints are less commonly involved).

3. Chronic periostitis (saber shins).

4. Alopecia.

5. Subcutaneous gummata with ulceration—usually of the face and shins.

6. Gummata of the bone, which may break down and leave draining sinuses.

7. Hutchinson's teeth (peg and notched *permanent* upper central incisors). A "mulberry" or "moon" molar is frequently seen in association with the typical Hutchinson's teeth, or it may be the only manifestation noted.

8. Saddle nose.

9. Perforated nasal septum.

10. Rhagades.

11. Nerve deafness, bilateral.

12. Juvenile paresis.

13. Tabes.

14. Paroxysmal hemoglobinuria.

15. Miscellaneous:

a. Hoarseness, stridor.

b. Facial asymmetry.

c. Mental and physical retardation.

d. Genital hypoplasia.

e. Higoumenaki's sign (thickening of the sternal end of the clavicle).

f. Hepatitis.

Numbers 1, 7 and 11 make up Hutchinson's triad, which is not commonly seen.

Aortitis and other involvement of the cardiovascular system is rare in prenatal syphilis.

Treatment of Prenatal Syphilis

After the diagnosis has been definitely established, treatment should be instituted immediately. The percentage of cures with the plan suggested below is as high as that obtained with methods followed in other clinics, and the cooperation of the parents is greater when less intravenous therapy is given in the younger age group.

Treatment of children under five years of age:

Drugs of choice:

1. Arsenical drug:

a. Acetarsone (Stovarsol). This drug is a pentavalent arsenical. Its chief advantage is that it can be given by mouth. In spite of the criticism given this drug, the evidence justifies its use in children under 5 years of age.

b. Neoarsphenamine — intravenously. In infants the superficial veins of the scalp or the jugular vein are usually accessible for intravenous treatment.

c. Sulfarsphenamine. This drug has the advantage that it can be given intramuscularly, but it should be used with great care since it is far more toxic than the other arsphenamines.

2. Heavy metals:
   a. Bismuth salicylate is the drug of choice. The drug is easily administered and rarely causes serious reactions.

Methods of administration:

The patient should be started on bismuth salicylate for the first six weeks, then treated as outlined below.

All children should have a spinal fluid examination at the completion of treatment. It should be done earlier if indicated.

It must be remembered that although children tolerate treatment better than do adults, they are subject to the same reactions.

Suggested Outline of Treatment

Children under 5 years.

Treatment should consist in alternating courses of bismuth salicylate and acetarsone (Stovarsol)[1], as outlined below. The bismuth—a 10 per cent solution in oil—should be given intramuscularly once a week in the following dosage:

Under 2 years—0.25 cc. (0.025 Gm.)—0.5 cc. (0.05 Gm.)

Two to 5 years—0.5 cc. (0.05 Gm.)—1.0 cc. (0.1 Gm.)

The dosage of acetarsone is as follows:

First and second weeks of each course 5 mg. per kilogram of body weight daily.

Third and fourth weeks, 10 mg. per kilogram daily.

Fifth and sixth weeks, 15 mg. per kilogram daily.

Seventh through the ninth week 20 mg. per kilogram daily.

Period of Treatment	*Drug*	*Tests*
1st-6th weeks 7th-15th weeks	Bismuth salicylate Acetarsone	Wassermann test and urinalysis
16th-21st weeks 22nd-30th weeks	Bismuth salicylate Acetarsone	Wassermann test and urinalysis
31st-36th weeks 37th-45th weeks	Bismuth salicylate Acetarsone	Wassermann test and urinalysis
46th-51st weeks 52nd-60th weeks	Bismuth salicylate Acetarsone	Wassermann test and urinalysis
61st-66th weeks 67th-75th weeks 76th-80th weeks	Bismuth salicylate Acetarsone Bismuth salicylate	Wassermann test and spinal fluid examination.

After eighty weeks of treatment, if the Wassermann reaction is negative, the patient should return every three months for a check-up the next year and once annually thereafter up to puberty.

Children over 5 years.

Alternating courses of bismuth salicylate (1 cc. of a 10 per cent solution in oil given intramuscularly) and neoarsphenamine (10-15 mg. per kilogram of body weight given intravenously) should be given, as outlined below. The dose of neoarsphenamine should not exceed 0.3 Gm.

Period of treatment	*Drug*	*Tests*
1st-6th weeks 7th-12th weeks	Bismuth salicylate Neoarsphenamine	Wassermann test and urinalysis
13th-18th weeks 19th-24th weeks	Bismuth salicylate Neoarsphenamine	Wassermann test and urinalysis
25th-30th weeks 31st-36th weeks	Bismuth salicylate Neoarsphenamine	Wassermann test and urinalysis
37th-42nd weeks 43rd-48th weeks	Bismuth salicylate Neoarsphenamine	Wassermann test and urinalysis
49th-54th weeks 55th-60th weeks	Bismuth salicylate Neoarsphenamine	Wassermann test and urinalysis
61st-66th weeks 67th-72nd weeks 73rd-80th weeks	Bismuth salicylate Neoarsphenamine Bismuth salicylate	Wassermann test and urinalysis and spinal fluid examination.

After eighty weeks of treatment, if the Wassermann reaction is negative the patient should return every three months for a check-up the next year, and then once annually for five years.

1. Acetarsone reactions (rare): (1) diarrhea, (2) rashes, (3) fever, (4) pyelitis, (5) nephritis, (6) Herxheimer reaction. If a reaction appears, discontinue the drug for a period of one or two weeks, and then either continue the drug with a minimal dose or start on a bismuth course if that course is about due.

Irregular Treatment of Syphilis.—In a study of patients in the latent period, that between the primary infection and the development of symptoms of the late manifestation of the disease, Moore found that cerebrospinal fluid abnormalities were three times as frequent in patients who had received irregular treatment as in those whose treatment had been continuous, and that serious abnormalities were ten times as frequent in the irregularly treated group as in the group that had received good treatment.—H. Houston Merritt, M.D.: The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System, New England J. Med. 223:446 (September 19) 1940.

The Cause of Syphilitic Meningitis. — It was argued for some time that the appearance of syphilitic meningitis was due to treatment with arsenic, the theory being that the arsenic had driven the spirochetes into the nervous system and caused the meningitis. This hypothesis is, of course, without foundation, and probably arose from the fact that the introduction of arsenic in the treatment of syphilis was coincidental with the development of the technic of removing and examining the cerebrospinal fluid. In the vast majority of cases the meningitis develops in patients who have received no previous treatment or an amount that was entirely inadequate.—H. Houston Merritt, M.D.: The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System, New England J. Med. 223:447 (September 19) 1940.

HISTORY OF UROLOGY IN NORTH CAROLINA

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In 1799 a medical society was organized in Raleigh, with the appointment of a Board of Censors, germ of the present Board of Medical Examiners established in 1859. This first North Carolina Medical Society was dissolved in 1804. For forty-five years no formal organization of the medical profession existed in the state. The present State Medical Society was founded in April, 1849, when twenty-nine doctors from eight counties gathered in the assembly room of the Supreme Court at Raleigh. Dr. Edmund Strudwick of Hillsboro became the first president. This Society has met annually since its organization, except for the years 1861-1867. Aimed at improvement in ethics, advancement of professional standards and promotion of the public health, this organization confronted many obstacles. In fact, in 1869, a bill was introduced into the Legislature designed to bring about its dissolution.

The *Transactions* of the Medical Society of the State of North Carolina preserve for us records of the medical practices of those early days. Much attention was devoted to the fevers: typhoid, malaria, epidemic dysentery, cholera infantum, and bilious remittent fever. Bad air was credited with a causal relationship to most diseases. Much of the early literature came from the pens of men who were not alone practitioners of medicine, but whose versatility included a knowledge of chemistry, farming, nursing and the virtues of medicinal plants. May we quote from Dr. John Wesley Long's "Early History of the North Carolina Medical Society": "To say of these pioneers that many of their theories and practices have been proven to be erroneous is only to anticipate what posterity shall say of us. They lived up to their best lights, the most advanced science of their day. If we are in any sense better than our fathers were, it is only because 'a live dog is better than a dead lion.'"

One is impressed by the scant reference to examination of the urine in the early days. No mention was made of gonorrhea until 1878, the year before Neisser described the causal organism. Dr. William B. Norcom of Edenton discussed Otis' method of management of urethral strictures and observed that "Gleet is always accompanied by stricture. Cure the stricture and you will cure the gleet."

Long before the birth of urology as a specialty in North Carolina, physicians were confronted with the problems of the urologist and managed them with unhesitating skill and success. In a sketch of diseases encountered in Wilmington from 1841-1850 the only reference made to disturbances of the urinary tract was mention of four cases of nephritic colic followed by the expulsion of calculous concretions. In 1855 Dr. N. J. Pittman of Rocky Mount in a review of surgical cases seen within the year included the following: 1. A vesico-vaginal fistula in a 17 year old servant girl, repaired with partial success by the method of M. Jobert de Lambelle. 2. Phimosis in a slave boy 2½ years of age. 3. A negro boy, aged 12, with chills and fever, generalized dropsy, loss of appetite, and diarrhea. A bladder stone weighing 2 ounces, detected by the passage of a sound, was removed by lateral lithotomy. The patient was able to "leave his bed on the fiftieth day and thenceforth continued in good health." 4. Multiple perineal fistulae connecting with the urethra in a 34 year old man, relieved by wide incision and the insertion of an inlying catheter without the benefit of anesthesia. 5. An operation for hydrocele pending, the plan being to inject the tunica vaginalis with port wine diluted to one-third.

The chemical analysis of a stone removed from the bladder was described by Dr. J. F. Shaffner, of Salem, in 1868: "Chemically considered it is of the uric variety. Water has no effect upon it while liquor potassae dissolves it. By addition of nitric acid and the application of heat it disappears with effervescence. Before a glow-pipe it becomes black and is gradually consumed, leaving as a residue a minute quantity of white ashes."

There is not one among us who does not frequently see dramatic relief of bladder dysfunction in the female following urethral dilatation. In 1872, Dr. Henry T. Bahnson, of Salem, reported the accidental discovery of the efficacy of this type of therapy. He was consulted by a 65 year old woman who

Read before the North Carolina Urological Association, Sedgefield, October 14, 1940.

complained of excruciating agony in the bladder region. There was an intermittent stream, hesitancy and strangury, due presumably to a stone in the bladder. Under ether anesthesia, the urethra was forcibly dilated to admit the index finger. Bimanual palpation failed to demonstrate a stone. "Much to our surprise the lady recovered entirely and has to this day suffered not the slightest inconvenience or difficulty in micturition." This encouraged Dr. Bahnson to report 2 additional cases thus heroically treated with the same satisfactory results.

The creation and use of the lithotrite in the management of vesical calculus led Dr. Marcellus Whitehead of Salisbury, retiring as president of the North Carolina Medical Society in 1873, to make the following comment: "The operation of lithotrity has now been perfected and no surgeon would propose the operation with the knife when the lithotrite could effect his purpose. And this operation alone affords one of the notable triumphs of the surgeon's art."

Realistic description of symptoms due to bladder stone was offered by Dr. W. R. Sharpe, of Davie County, in 1874, in his discussion of the case of a 9 year old emaciated negro boy with distress of urination beginning at the age of 7 months. "The left hand and arm were more dwarfish than the other owing to the fact that the right was used for gripping and pulling at the penis to relieve the distressing itching and tormenting feeling of the urethra, which followed the more acute and agonizing suffering during and immediately after passing the urine."

Many of the activities of these physicians and surgeons living during the nineteenth century have been recorded in the writings of Dr. Hubert Ashley Royster, eminent pioneer in the field of general surgery in North Carolina. In a paper read before the Wake County Medical Society in 1910, Dr. Royster said of Dr. Abram V. Budd: "His operations for vesical calculus, a very prevalent affection in Chatham County at that time, were the admiration of the profession of the state." Dr. Budd was born in 1830. He is credited with having performed in 1885 the first suprapubic cystotomy for stone in North Carolina. Dr. Royster cited a memorandum on a receipt to Dr. Budd for a subscription to the *North Carolina Medical Journal* in the writing of Dr. Thomas F. Wood, editor of the *Journal*, dated March 9, 1885: "Hope you are going to the Durham meeting. I have those surgical volumes. I will bring them to you if you will promise to bring me an account of your high operation for stone. No manuscript, no trade. Answer."

In the year 1824 Dr. Caleb Winslow was born in Perquimans County. A fractured clavicle in early life turned his attention from teaching to medicine, and he graduated from the University of Pennsylvania in 1849. For many years he practiced in the town of Hertford in his native county, acquiring wide renown as a physician and surgeon. His particular claim to fame was as a lithotomist, and he recorded 99 consecutive lithotomies with only one death. The patient who would have become the hundredth case was referred to his son, the late Dr. Randolph Winslow, then head of the department of surgery at the University of Maryland.

Dr. Caleb Winslow became examiner in surgery on the first North Carolina Board of Medical Examiners elected in 1859. Dr. John Wesley Long, addressing the annual meeting of the North Carolina Medical Society in April, 1917, quoted from a biographical sketch appearing in the *North Carolina Medical Journal* for August 1892: ". . . . Dr. Winslow was widely known as a skilful surgeon. His record of 99 lithotomies with one death was for a long time the best in the world . . . ." The devastation resulting from the Civil War led Dr. Winslow to move to Baltimore, where he devoted his talents to general practice and obstetrics with great success. His death occurred in June, 1895.

During these early days stone, particularly bladder stone, was evidently often encountered. We are indebted to Dr. Hubert A. Royster for his paper on the life of Edmund Strudwick read before the North Carolina Medical Society in 1907 and published in April, 1936, in the *Southern Surgeon*. Dr. Strudwick, born in 1802 and first president of the North Carolina Medical Society, was designated as the leading lithotomist of his time. He lived in Hillsboro, Orange County, until his death in 1879, having graduated from the University of Pennsylvania in 1824. His reputation became widespread and he was much in demand in all sections of the state. Dr. Strudwick practiced the lateral lithotomy, the method in vogue prior to Dr. Budd's introduction of the "high operation"

in 1885. It was the custom to use no drain except in the case of hemorrhage. Dr. Strudwick is reported to have performed 28 consecutive lithotomies without a death, in one case having to resort to a blacksmith's tongs to crush a stone too large to be removed through the incision.

Dr. Hubert Ashley Royster, of Raleigh, whose father was an eminent physician, began practice in July, 1895, following his graduation from the University of Pennsylvania in 1894. In 1906 he became the first physician in North Carolina to restrict his practice to general surgery. In 1897 Dr. Royster submitted to the *North Carolina Medical Journal* a paper entitled "External Urethrotomy Without a Guide", the first operation of its kind recorded in the state.

Dr. Royster owned the first Valentine irrigator in North Carolina in 1899, and had in his possession a Harris segregator, an ingenious device designed to collect separate ureteral specimens in the female. He recalls having assisted Dr. Augustus W. Knox, an older confrere, in a medium lithotrity, requiring 6 hours, in 1900. It was Dr. Royster's inspiration and encouragement that led Dr. Claude O. Abernethy, first North Carolina physician outside of Charlotte to devote his attention to urology, to enter this field. Dr. Royster's practice covered a wide area and his experience with urological problems was abundant. In 1912 he published in the INTERNATIONAL CLINICS, Vol. II, 2nd Series, "Observations on Surgery of the Kidney", a comprehensive treatise dealing with stone, tuberculosis, displacements, sepsis, tumors and injuries, citing examples of each condition. He observed that many patients with kidney stones developed addiction to morphine.

Any discourse on the history of urology as a specialty in North Carolina must stem from and revolve about the life and work of Dr. Andrew J. Crowell, born in 1867 in Union County. The development of urology in North Carolina received impetus and inspiration from Dr. Crowell, whose pioneering spirit led him to be the first in the state to devote his undivided attention to the specialty at the turn of the twentieth century. Dr. Crowell became widely known and revered, not alone for his scientific proficiency, but for his unceasing efforts in the interest of urology in his state and nation. He received his medical degree from the University of Maryland in 1893. Thereafter he did general practice for five years in China Grove, and for three years in Charlotte. Early in 1901, when the specialty of urology was yet in its infancy, he spent six months at the Polyclinic and Post-Graduate Hospitals in New York and at the Johns Hopkins Hospital in Baltimore. Some indication of the status of the specialty in those days may be gathered from Dr. Crowell's own words: "I first went to New York but soon found they taught nothing but venereal diseases and their complications. Naturally I was disappointed and moved to Hopkins in about 3 months. During my stay in New York I saw only one prostatectomy. I don't think I saw a single kidney operation of any kind or an observation cystoscopy. Ureteral catheterizations were not mentioned and of course no attempt was made to do them. I did myself the first ureteral catheterization I ever saw and the second prostatectomy I ever saw.

"When I came back to Hopkins, I found Dr. Young had just married and was on his wedding vacation. However, his assistants were quite courteous, needing help, and put me to work in the dispensary where I obtained valuable experience in venereal diseases. On Dr. Young's return I soon found urology offered wonderful opportunities."

Dr. Crowell's zeal and enthusiasm were never abated until his death on September 21, 1938. When he located in Charlotte in 1901, he became the first man between Atlanta and Baltimore to limit his practice to urology.

Dr. Crowell's initiative is affirmed by his almost annual appearance for many years on the program of the North Carolina Medical Society after 1902. He discussed comprehensively such topics as "Retention of Urine", "Surgery of the Prostate", "Use of the Cystoscope", "Conservative Prostatectomy" and "Hematuria". He did monumental work on urinary tuberculosis and the conservative management of ureteral calculi.

In 1912 Dr. Crowell, with Dr. James Squires, organized the Crowell Clinic of Urology and Dermatology in Charlotte. The Crowell Clinic soon established Charlotte as the urological center for a large area and gave to many men post-graduate training in urology. Many of the graduates of the North Carolina Medical College at Charlotte, now closed, entered the field of urology, some re-

ceiving their training from Dr. Crowell and his associates. Among those who devoted their attention entirely to urology were Drs. James Squires, S. Raymond Thompson, William C. Mebane, Milas B. Rozzell, Hamilton W. McKay, Wilmer L. Grantham, and V. M. Long. Others who gave considerable time to the specialty were Drs. John L. Ransom, W. E. Wishart and F. D. Austin.

Dr. S. Raymond Thompson, past secretary-treasurer of the Southeastern Section, became associated with the Crowell Clinic upon his graduation from the North Carolina Medical College in 1914. He thus became the second North Carolina physician to practice urology exclusively. Dr. Thompson played a prominent role in the affairs of the Crowell Clinic from 1914 to 1939, when his connection with the Clinic was discontinued. The staff of the Crowell Clinic is now headed by Dr. Claude B. Squires, brother of Dr. James Squires, associated with the Clinic since his graduation from the Jefferson Medical College in 1918.

The history of the development of transurethral resection is linked closely with the Crowell Clinic. In 1930 Dr. T. M. Davis, of Greenville, South Carolina, having perfected the Davis high frequency current, became associated with the Clinic in the capacity of resectionist. Dr. Davis did yeomen service in developing the type of electric current and technique essential for the successful accomplishment of a procedure which has revolutionized the management of many prostatic problems.

Those men associated with the Clinic have contributed much to the urological literature. The work of the Clinic continues as a living memorial to the inspiration and leadership of its founder. At the 1938 annual meeting of the North Carolina Urological Association, dedicated to the memory of Dr. Crowell, first president of the Association, the address was delivered by his pupil and contemporary, Dr. V. M. Long, who began the practice of urology in Winston-Salem in 1916.

It was almost a decade and a half after Dr. Crowell became the first urologist in North Carolina before a physician outside of Charlotte devoted himself exclusively to the specialty. Dr. Claude O. Abernethy, graduate of the Medical School of the University of North Carolina in the class of 1906, became a general practitioner in Raleigh. In 1912, at the behest of Dr. Hubert A. Royster, Dr. Abernethy began to do observation cystoscopies, but it was not until 1915, after post-graduate study in Philadelphia, that he confined his practice exclusively to the specialty. This he did until his retirement in 1935.

In the same year, 1915, Dr. William C. Mebane, graduate of the North Carolina Medical College in the class of 1905, located in Wilmington following his training in urology at the New York Post-Graduate Hospital.

Urology in North Carolina has received much of its impetus to progress in the last two decades through the tireless efforts of Dr. Hamilton W. McKay, graduate of the North Carolina Medical College in 1909 and of Jefferson Medical College in 1910. Dr. McKay began to practice urology in Charlotte in 1918. About ten years later his brother, Dr. Robert McKay, trained by Dr. Hugh Young, became associated with him. Dr. Hamilton McKay was largely responsible for the organization of the North Carolina Urological Association in 1930. It was out of this idea for a formal organization of the urologists in the state that a plan was formulated to organize the Southeastern Branch Society, to become a part of the parent organization, the American Urological Association. Excerpts from the following correspondence indicate something of the origin of the Southeastern Branch Society, now the Southeastern Section, which has become a thriving organization with more than two hundred members, and includes North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee and Kentucky.

Dr. Hamilton McKay to Dr. James J. Ravenel of Charleston, South Carolina, July 19, 1929 in reply to a letter suggesting a joint organization of the urologists of North and South Carolina: "I am very much interested in your proposal to have North Carolina urologists join you in a joint urological association . . . . If any thing comes of these ideas, I would certainly like to see us apply for a branch of the American Urological Association in this section of the South."

Dr. Hamilton McKay to Dr. Alexander Randall, then secretary of the American Urological Association, on November 13, 1929: " . . . For two or three years I have been interested in the organization of a South Atlantic or Southeastern Branch of

the American Urological Association and I want to know how to go about doing some intelligent work to bring such an organization into being . . . I believe you will agree with me that such an organization would both stimulate and elevate urology and probably make the parent organization stronger throughout the South.

"As I remember it, we have about fifteen members of the American Urological Association in the Carolinas, and I believe they would cooperate in the organization of such a branch."

Dr. Hamilton McKay to Dr. C. O. Delaney of Winston-Salem, October 24, 1929: ". . . If we organize a tentative North Carolina Urological Association, I am sure we could join with South Carolina, Virginia and say, Georgia and some of the other states and we would have an impressive application to present to the national body, to allow us to establish a branch in this section of the South . . ."

Dr. Hamilton McKay became president of the Southeastern Branch Society in 1935.

Facilities for the post-graduate training of urologists have been slow to develop in North Carolina. Dr. William M. Coppridge, after his graduation from the Jefferson Medical College in 1918 and his urological training under Dr. B. A. Thomas in Philadelphia, located in Durham in 1920. He established a Department of Urology in the Watts Hospital. His constant efforts resulted, in 1939, in the approval of this department for the training of residents and for post-graduate instruction in urology, the first non-teaching department in North Carolina to be thus recognized by the American Medical Association.

Dr. Coppridge has been vitally interested in the growth of the specialty in North Carolina and in the South. His interest in furthering the organization of those devoting themselves to urology is suggested in the following excerpt from a letter to Dr. Claude B. Squires, January 13, 1930: "I agree with you that medicine in this state is highly organized but somehow it seems that the urologists are pretty much left out of all groups. It is true that we are permitted to read papers before various sections, but so far as getting together as a bunch of men interested in each other, we do not have the privilege. I wrote Dr. Greenwood a year or so ago following a conversation that we had in Chicago about the urologists in North Carolina getting together in some kind of informal meeting several times a year . . . I think the American Urological Association is a great organization and I believe that a North Carolina, South Carolina and Virginia branch will be beneficial to us all, but what I think would be of far more help to us than anything else, is the formation of a North Carolina group affiliated with the sectional and national groups."

Among the other urologists beginning their practice in North Carolina in the second and third decades of this century was Dr. Wilmer L. Grantham, who trained under Dr. Hugh Young and located in Asheville in 1919 to become the first urologist in that locality. He was shortly followed in 1921 by Dr. A. Barte Greenwood, for several years connected with the State Laboratory of Hygiene prior to his post-graduate work in urology in New York City. Dr. Thomas R. Huffines, graduate of the University of Indiana in 1919 began the practice of urology in Asheville in 1923. Dr. C. O. Delaney settled in Winston-Salem to practice urology in 1924. Dr. Delaney was the second man in the state to do transurethral resections. Dr. Fred M. Patterson located in Greensboro in 1928, having graduated from the University of Pennsylvania in 1924.

In 1930 the founding of the Duke University Medical School at Durham, of which the state is justly proud, marked the establishment of the first department devoted to formal training of urologists in North Carolina. Dr. Edwin P. Alyea, the head of this department, graduated from Johns Hopkins Medical School in 1923 and spent three years, 1926-1929, with Dr. Hugh Young. This department will surely furnish the state with many men well-trained in the specialty in the years to come.

Reference has previously been made to the organization of the North Carolina Urological Asssociation in 1930, an important milestone in the progress of the specialty in the state and linked inseparably with the formation of the Southeastern Section. The first meeting of the organizing group was held at Greensboro, January 30, 1930, arranged by Drs. Hamilton McKay, C. O. Delaney, F. M. Patterson, and J. A. Keiger. The following urologists were invited to attend this organization meeting: Drs. C. O. Delaney, F. M. Patterson, Kenneth E. Montgomery, James

A. Keiger, A. B. Greenwood, Thomas R. Huffines, Wilmer L. Grantham, Sidney Smith, R. H. McFadden, Hamilton W. McKay, Robert W. McKay, A. J. Crowell, C. B. Squires, S. R. Thompson, W. M. Coppridge and O. LeGrand Suggett.

This association has grown to a membership of more than forty. Its annual meetings are characterized by good programs, both social and scientific, with speakers from within its membership and prominent urologists from other sections. During recent years a large number of excellently trained young urologists have located in North Carolina, thus insuring the prospect of a bright future for the specialty in this state.

It has been the purpose of the author to collect in this brief essay some facts about the origin and growth of the specialty of urology in North Carolina. Apologies are extended to the many heroes left unsung. Grateful appreciation is expressed to Dr. William M. Coppridge for wise counsel and inspiration, to Dr. Hamilton McKay for the use of his file on the North Carolina Urological Association, to Dr. Hubert A. Royster of Raleigh for invaluable information, to Dr. Arthur M. Shipley of Baltimore for data concerning Dr. Caleb Winslow, and to all members of the North Carolina Urological Association who so willingly supplied much of the material.

His First Cereal Feeding

The baby's first solid food always excites the parent's interest. Will he cry? Will he spit it up? Will he try to swallow the spoon? Far more important than the child's "cute" reactions is the fact that figuratively and physiologically, the little fellow is just beginning to eat like a man.

It is a fortunate provision of Nature that at the time the infant is ready to receive the nutritional benefits of cereal, his taste is unspoiled by sweets, pastry, condiments, tobacco, alcohol and other things to which adult palates and constitutions have become conditioned.

Many a parent, with limited knowledge of nutrition, attempts to do the baby's tasting for him. Partial to sweets, the mother sweetens her child's cereal. Disliking cod liver oil, she wrinkles her nose and sighs: "Poor child, to have to take such awful stuff!" The child is quick to learn by example, and soon may become poor indeed—in nutrition, as well as in mental habits and psychological adjustment.

Appreciating the importance and difficulties of the physician's problem in establishing and maintaining good eating habits, Mead Johnson & Company continue to supply Pablum in its natural form. No sugar is added. There is no corresponding dilution of the present protein, mineral and vitamin content of Pablum.

THE VETERANS ADMINISTRATION

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FAYETTEVILLE

The background of the Veterans Administration extends far into history. Genghis Kahn in his conquest of Asia found it to his advantage to preserve his man power, and provided a crude system of patronage for his followers who were disabled in battle. For generations following, certain steps of progress were made in the care of veterans, although this care slumped to its lowest state during the feudal days of medieval Europe.

At the time of the Revolutionary War England was probably foremost in its care of disabled soldiers and sailors, providing a home with medical care and religious guidance for these older people. At first the provisions were for those who had lost limbs only; later it extended beyond this point, and, at the same time, certain monetary benefits were given in various instances. Oftentimes land grants or charter rights were provided. Following the Declaration of Independence of this country and the termination of the Revolutionary War, a system of benefits was provided which comprehended largely the provision of land grants. Later small monetary benefits were provided. The first monetary benefits came about the beginning of the nineteenth century. The system grew and was perpetuated through the Pension Bureau, which, for many years, was a branch of the Department of Interior. Land grants continued with decreasing frequency and size even until the end of the nineteenth century. In fact, certain land grant privileges, or settlement of Government land, were provided subsequent to the World War.

In October of 1917 the Congress of the United States enacted legislation providing War Risk Insurance, which was generally supposed to supplant pensions; but in no place in the Act did that specific provision appear. The National Home Service for disabled veterans was first inaugurated in 1866; then following the World War came the Bureau of War Risk Insurance, and the Federal Board of Vocational Education. Com-

Read before the Fifth District Medical Society, Fayetteville, October 24, 1940.

pensation was provided, vocational training was furnished, treatment was given; and, where a veteran elected, he still might receive a land grant in lieu of vocational education. The examinations and treatment were conducted by the U. S. Public Health Service, which brought a fifth Government agency into the picture.

In August of 1921 the Veterans Bureau was created by consolidating the Federal Board of Vocational Education, the Bureau of War Risk Insurance, and most of the medical activities of the Public Health Service. From time to time various legislation was enacted providing ever-increasing benefits to veterans, including compensation for disabilities which arose within a prescribed period subsequent to service, and were therefore presumed to be connected with service.

In 1925 and 1926 the Veterans Bureau took over all hospitalization of veterans from the Public Health Service.

In July of 1930 the Veterans Administration came into existence by the further consolidation of the Veterans Bureau, the Pension Bureau, and the National Home Service. The benefits provided by the Veterans Administration, including the non-service pension, continued to increase until the Economy Act of 1933 was passed, at which time many reductions were made both as to entitlement to benefits and as to the degree of payments for disability. However, since that date various laws have leveled off the extremes of legislation, and the Administration has resumed a more nearly normal growth, until now there are ninety facilities, or hospitals, under its exclusive jurisdiction. There are also approximately a dozen Regional Offices yet remaining. At one time there were fifty-four, but they have gradually disappeared by consolidation with hospitals to form what is termed a "Facility", where all phases of a claim may be properly handled—whether it be for compensation, pension, insurance, out-patient treatment, or hospitalization.

During the entire time since the close of the World War the various agencies administering to the needs of veterans have obtained hospitalization for them in other Government hospitals. Only service connected disabilities may be treated in hospitals other than Government hospitals, except that special provisions of the law have permitted emergency hospitalization of women in private, city or state hospitals.

The Veterans Administration is headed by a Central Office and is under the direction of the Administrator of Veterans Affairs. He has Assistant Administrators, Directors of Services, Chiefs of Divisions, and so forth, much in the order of the formation of an army corps. The Central Office employs about 6,000 persons, and there are approximately 40,000 people employed throughout the United States and its insular and foreign possessions. Of the group in the Central Office, the Medical and Hospital Service is headed by a Medical Director with an Executive Officer, a Counsellor and four Division Chiefs. The professional personnel of the Central Office consists of seventeen doctors and dentists, with approximately ninety clerical employees and sub-professional personnel. This group, in addition to promulgating the regulations for their Service, administer to the Medical and Hospital Service throughout the country, assigning professional and sub-professional personnel, supervising promotions, demotions, transfers, procurement of equipment for hospitals, the furnishing of food and clothing to patients, out-patient treatment, and the various and sundry duties that go with such an organization.

The vast majority of the appropriation each fiscal year which is provided for the Veterans Administration goes for compensation and pension. Less than 15 per cent, or approximately $80,000,000 annually, is provided for the Medical and Hospital Service for all purposes including maintenance of existing Facilities, salaries of personnel of the Medical and Hospital Service, food for patients, medicines, equipment for out-patient treatment, orthopedic and prosthetic appliances, and adequate clothing for indigent patients. This sum also must cover the cost of examinations of veterans for compensation, pension, or insurance purposes, and to determine the need of hospitalization.

The size of the appropriation for the Medical and Hospital Service makes it imperative that strict economy be observed; and, yet, no benefit or treatment may be denied a veteran requiring hospitalization or treatment when he is entitled thereto. Accordingly, with careful management, the Administration is able to provide hospitalization in such an institution as this Facility at an average rate of $3.75 a day per patient. This covers every expense connected with

hospitalization and treatment, including salaries of physicians, nurses, technicians, hospital attendants and the dietetic staff and personnel.

The Administration has three distinct types of hospitals: first, those for the treatment of tuberculosis, a disease which reached the peak load about 1927; second, the neuro-psychiatric hospitals, where only mental and neurological cases are treated, not psychoneurotics. These now require the largest number of beds, and it is anticipated that the peak load of these conditions will not be reached until about 1947. The third type of hospitals are those for general medical and surgical cases. There is a steady increase in cases of this type and it is anticipated that the peak load will not be reached until some time after 1960. These dates are based upon the existing war veteran load, with the normal complement of peace time veterans, but would have to be revised in the event of a prolonged national emergency or another war.

I know you are interested in the type of cases which are eligible to receive hospitalization or domiciliary care.

There are two major divisions of eligibles: first, war veterans, irrespective of the war in which they served; second, peace-time veterans.

There are two major divisions of eligibility for hospitalization: first, for service connected disabilities; second, for non-service connected disabilities.

The minimum requirement for hospitalization or domiciliary care for a war veteran is that he must have served during a war and must not have been dishonorably discharged, and he must swear that he is unable to defray the costs of hospitalization or domiciliary care. The minimum requirement for a peace-time veteran for hospitalization is a discharge from service because of a disability incurred in line of duty, or the receipt of a pension because of a service connected disability. Either of these conditions makes a veteran eligible, if it is affirmatively shown that he is unable to defray the costs of hospitalization or domiciliary care. The war veteran must swear that he is unable to pay to be entitled to hospitalization of a non-service disability. However, a peace-time veteran is entitled to hospitalization for a non-service disability only when he is in fact unable to pay and is not entitled to the treatment from any other source.

Both war and peace-time veterans are entitled to hospitalization for their service connected disabilities irrespective of their ability to pay.

The dates of wars are definitely defined, and the one with which you are most concerned is the World War which began April 6, 1917, and officially ended November 11, 1918. An enlistment ending after April 6, 1917, or beginning before November 11, 1918, from which the applicant was discharged other than dishonorably, entitles him to the classification of a war veteran. If he needs hospitalization for a service connected disability he has precedence over the case needing hospitalization for a non-service disability. However, in either event, first consideration is given to the applicant who presents the greater need, and provisions are always made for emergency cases.

Hospitalization may not be provided in private institutions unless for a service connected disability, except, as previously stated, in emergency female cases. This is in accordance with the law and is not a regulatory provision. Oftentimes veterans feel that they have a service connected disability, but the term as used herein refers to a disability which has been adjudicated by the Veterans Administration as service incurred. Hospitalization for service connected disabilities outside of Government hospitals must have prior written authorization; or, in the event of a true medical emergency where the condition of the patient prohibits removal and where Government facilities are not feasibly available, reimbursement may be made later provided he was in receipt of compensation for that specific condition at the time he was hospitalized.

The women who are eligible for hospitalization include the nurses who served during the World War or subsequent thereto, yeomanettes of the U. S. Navy during the World War, contract nurses who served during the Spanish American War, and those women who served in France with base hospitals during the World War under orders from the War Department. This does not include nurses or entertainers who served overseas with either the Red Cross, the Y.M.C.A., or other agencies.

Soldiers who served in the Confederate

Army during the war between the states are not eligible to receive hospitalization through the Veterans Administration, since they have not served in the army of the Federal Government.

Those persons who served with the armed forces of the United States between April 21, 1898, and July 4, 1902, if not dishonorably discharged, are eligible for hospitalization, irrespective of where they served. This entire group of persons who served in the Spanish American War, the Philippine Insurrection, and the Boxer Rebellion are considered veterans of the Spanish American War.

A thought worthy of careful consideration was expressed on Dedication Day by Colonel George E. Ijams, Assistant Administrator, who brought out the fact that, aside from the service connected veterans who are entitled to treatment for their war or peacetime disabilities, the entire remaining group are primarily men or women who, if not furnished treatment by the Federal Government, would have to be furnished treatment and care through the state, the county, the city, or a charitable organization.

In the past, one of the greatest difficulties in securing full cooperation between private physicians and the Veterans Administration has been the subject of examinations and recommendations for hospitalization or for increased ratings. First, let me state that a veteran who has no service connected disability may not be hospitalized on his request or on the recommendation of the private physician for the purpose of securing examinations or observation to determine the need of hospitalization or to secure increased benefits.

The physicians of the Veterans Administration work as a unit, the opinion of each physician and his findings being coordinated with those of all others who examine or see the patient. It has been a long established rule with the Administration that diagnoses are expressions of opinion, while the physical findings and objective symptoms are the facts in the case. In other words, examining physicians know that their physical findings constitute the findings of fact, but that their diagnoses are merely opinions as to what the condition may be. Accordingly, if you desire to assist a veteran in obtaining hospitalization, you can best do so by submitting physical findings, objective symptoms, and laboratory findings. An application bearing merely a diagnosis and a recommendation that the applicant be hospitalized cannot be approved without physical findings to substantiate the diagnosis.

Please allow me to assure you that this is not medically empirical, but is a requirement of our Government, since action culminating in the hospitalization of a veteran is an authorization of an expense against the Treasurer of the United States.

Often a veteran applies for hospitalization and gives a history which leads the physician to believe that he has some condition requiring treatment, when, in fact, he is seeking monetary benefits and is using that means of reopening his claim. The records on file in the Administration may show that similar complaints from this particular applicant have been investigated time after time, and have been found to be such as to necessitate the determination that he is not in need of hospital treatment. Such a determination is not a reflection on the physician or his recommendation, neither is refusal of hospitalization to an applicant who is found by official records to be ineligible from a legal standpoint.

As a result of wars within the past seventy-five years, there has developed a class of cases which has been variously diagnosed as war neurosis, shell-shock, or one of the recognized psychoneuroses. Our experiences have taught us that each additional benefit or period of treatment given such cases has been of no avail, but has actually implanted these conditions more deeply. Consequently, hospital treatment is not given for psychoneuroses except in the more severe stages.

Contrary Laws.—Two contrary laws seem to be wrestling with each other nowadays; the one a law of blood and of death ever imagining new means of destruction and forcing nations to be constantly ready for the battlefield—the other, a law of peace, work and health, ever evolving new means of delivering man from the scourges which beset him. The one seeks violent conquests; the other, the relief of humanity. The latter places one human life above any victory; while the former would sacrifice hundreds of thousands of lives to the ambition of one. The law of which we are instruments seeks, even in the midst of carnage, to cure the sanguinary ills of the law of war; the treatment inspired by our antiseptic methods may preserve thousands of soldiers. Which of these two laws will ultimately prevail, God alone knows. But we may assert that science will have tried, by obeying the law of humanity, to extend the frontiers of life.—**Louis Pasteur.**

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APRIL, 1941

THE EIGHTY-EIGHTH ANNUAL SESSION

The eighty-eighth annual session of the Medical Society of the State of North Carolina will be held again at Pinehurst, on May 19, 20, and 21. This is a week later than last year's meeting, and two or three weeks later than the former customary first week in May. The change was made last year at the request of a number of our most active members, who belonged to special groups that also met the first week in May. Apparently the change was a popular one, for last year's attendance was the highest yet recorded.

The popularity of Pinehurst and of the Carolina Hotel is shown by the society's decision to return again for this year's meeting.

President Hubert Haywood has been on the job quietly but efficiently this year, and has spared no effort to keep the affairs of the society going smoothly. His task has been made harder by the demands of a legislative year, and of the medical preparedness program. After the tragically sudden death of Tom Long, he must have shared the feeling of General Lee when he declared that in the death of Stonewall Jackson he had lost his right arm. Fortunately, Miss Margaret Long's familiarity with every detail of the office, and the choice of Dr. Manning insured a minimum of disturbance in the administrative machinery. All the committees and section chairmen have functioned well, and have given Dr. Haywood splendid support.

Let it be remembered that it was voted last year to have two meetings of the House of Delegates on May 19. The first will convene at two o'clock at the Carolina Hotel; the second at eight p. m. This change, recommended by Dr. Tom Long, was made because more time was needed for the large amount of business to come before the House. It is the earnest wish of the official family of the society that this first meeting shall be well attended.

From the preliminary reports of the section chairmen, the scientific sessions will be well worth while. It is hard to understand how any doctor in the state who can possibly attend will fail to be present. While it is hard to think of a meeting without Tom Long, let us remember that his spirit will be with us, and that we will honor him by giving the program he had worked so hard to prepare a record attendance.

* * * *

"GOVERNOR" CARL V. REYNOLDS

Under the caption, "The Health of the Carolinas", the *Connecticut State Medical Journal*, in its March issue, says in part:

"The inaugural address of the two new governors of the Carolinas, Carl V. Reynolds of North Carolina and Burnett R. Maybank of South Carolina, are significant for their medical implications.

"Governor Reynolds calls the attention of his people to the fact that North Carolina has come to be known the world over for its pioneer work in the fields of useful endeavor, 'notably along the public health front.' During the past four years under his predecessor, Governor Reynolds emphasizes the fact that the full time public health departments in the State have increased from fifty-seven counties and four cities to eighty-one counties and six cities. It is the governor's aim to establish such full time departments in all of the 100 counties."

On behalf of this state, the NORTH CAROLINA MEDICAL JOURNAL wishes to thank our Yankee colleague, but is duty bound to point out that Dr. Carl Reynolds will not be eligible for the governorship for nearly four years, as J. Melville Broughton was inaugurated only last January. Furthermore, Dr. Reynolds is doing such a splendid job as Secretary of the State Board of Health and State Health Officer that it is doubtful if the people of North Carolina would be willing to release him, even to fill the governor's chair.

THE TRIAL OF THE AMERICAN MEDICAL ASSOCIATION

Since the first week in February the trial of the American Medical Association for "conspiracy in restraint of trade" has dragged its weary length along. It was hard to realize, even when seen in large type, that "THE UNITED STATES OF AMERICA" through its Department of (so-called) Justice, had actually instituted this suit. It was still harder to understand how the attorneys for the UNITED STATES OF AMERICA could stoop to the demagogic methods usually associated with the shyster, ambulance-chasing type of lawyer. The stenographic record of the trial, however, reveals clearly that the Government officials are basing their attack upon deliberate attempts to arouse class feeling by picturing the doctors on trial as arrogant, supercilious, mercenary individuals whose aim it is by boycott and underhand methods to defeat the champions of the dear people—represented by the lay organizers of Group Health Association, with the Sir Galahad type of medical knight errants in their employ.

It is hard to take in the bitter truth that while the great majority of the practitioners of the United States, through their official organization, are doing more than any other profession in the nation to forward the national defense program, their chosen leaders are handicapped because they must take time from the defense program to defend themselves against the government that they are trying to defend. It just doesn't make sense. To cloud one's thinking still more, the government, while sending the flower of the country's youth to training camps, allows its defense program to bog down because of innumerable strikes called by labor unions.

On February 3 the Supreme Court, by a 5 to 2 vote, ruled that labor unions could not be prosecuted for violation of the anti-trust laws. The American Medical Association is being prosecuted for exercising a privilege which labor unions hold sacred. The only difference is that the doctors act to protect the public from inferior medical service, while the labor union officials act to protect their own incomes. (Witness the common practice of charging initiation fees of $25 to $300 to join local unions.) The difference, in the eyes of the present administration, is the few thousand votes of the medical profession, compared with the millions of labor votes. O, Democracy, the crimes that are committed in thy name!

* * * *

A TRAGEDY OF ERRORS

The proponents of state medicine often compare the practice of medicine with education, and insist that it is as logical that the government should provide medical care for its subjects as that it should provide for their education. There are various reasons why the analogy does not hold. Even if it did, however, there are many reasons why the doctors of the country would object strenuously to the bureaucratic methods of the politicians.

A very recent example of obnoxious political domination of the teaching profession occurred when the State Board of Education rejected the History of North Carolina recommended by the Elementary Textbook Commission, and adopted instead a decidedly inferior one. The Textbook Commission, be it remembered, is a group of experts appointed to recommend suitable textbooks to be distributed free to the school children of North Carolina. The State Board of Education is composed of laymen, most of whom know nothing about the evaluation of textbooks. They did know, however, that the book they chose in preference to the choice of the Commission was written by a politician, and that it was a little cheaper than the other. Miss Nell Battle Lewis has rendered the state a great service by exposing in the *News and Observer* the worthlessness of the book. She has found more than two hundred errors of fact, not to mention innumberable ones of grammar, punctuation, and style. The fifth grade pupils of one school are having the time of their lives, in the words of Editor John Arch McMillan, "correcting the (book) written by one politician and adopted by another group of politicians . . . When they get through with their red pencils the book will look like the first proof of *Charity and Children* from the linotype of an orphan boy who is just beginning his apprenticeship."

This is not a comedy, but a tragedy. Let the doctors of North Carolina take heed lest, in addition to exploiting the plastic minds of our children, the politicians may be allowed to traffic in their health.

SENATOR RUFUS HOLMAN

A Friend of the Doctors

During the Christmas holiday season, Senator Rufus C. Holman, of Oregon, paid a brief visit to North Carolina friends, Mr. and Mrs. Charles T. Joyce, of Winston-Salem. His visit recalled an incident that took place in Washington May 18, 1939, when a committee from the American Medical Association appeared before the Senate Sub-Committee for a hearing on the Wagner Health Bill then pending. While he was not a member of this committee, Senator Holman came in at the beginning of the hearing out of respect to his friend, Dr. Robert L. Benson, who was one of the A.M.A. committee.

It had been agreed by the medical men that Dr. E. H. Cary, chairman of the committee, should introduce first Dr. Rock Sleyster, then president of the A. M. A., to speak briefly about the aims of the A. M. A.; then Dr. Walter F. Donaldson, who was to read the resolution adopted by the House of Delegates of the A. M. A., opposing the Wagner Bill. Dr. Donaldson was to be followed by the other members of the Committee, each of whom had carefully prepared arguments covering specific points about the bill. Dr. Sleyster was allowed to speak without interruption, but when Dr. Donaldson finished and turned to leave the stand, a barrage of questions were fired at him—chiefly by Senator Wagner himself. It was obvious that the physician was not prepared to debate all the proposals of the bill, and Senators Wagner and Ellender were taking advantage of his discomfiture. After a few minutes of this heckling, Senator Wagner sneered at him, "Just what do you mean?" Whereupon Senator Holman — a distinguished figure, with a veritable mane of white hair—rose from his seat and said, "It is quite evident what the doctor means. I don't see how any one can fail to understand him." Wagner turned upon him and snarled, "Nobody asked you to come in here and make a speech." Calmly Senator Holman replied, "I don't want to make a speech, but I do want to object to badgering the witness." Dr. Donaldson was allowed to resume his seat, and the court stenographer was told to strike the remarks between the senators from the record.

That afternoon Dr. Benson told the workers of his committee the sequel to the incident. While he was having lunch with Senator Holman in the Senate restaurant, Senator Wagner came to their table and asked his colleague, "What did you mean by jumping on me so this morning?" Whereupon Senator Holman replied, "Senator, I simply wanted to remind you that these doctors are gentlemen, and are accustomed to being treated as gentlemen. And another thing for you to remember is that they have a great deal of influence with the voters in their home states."

That afternoon Senator Wagner and his ally, Senator Ellender—a left-over of the Huey Long machine — were decidedly less belligerent. The members of the A. M. A. committee know that they, and all the doctors of the country, have a friend in Senator Rufus Holman.

* * * *

REGISTRY OF MEDICAL TECHNOLOGISTS IS MOVED

It has recently been announced that the Registry of Medical Technologists of the American Society of Clinical Pathologists has been moved from Denver, Colorado, to Muncie, Indiana. Since its organization in 1928 the Registry has been located in Denver, where its work has been carried on under the administration of its distinguished chairman, Doctor Philip Hillkowitz, and Mrs. Anna R. Scott, the registrar. The increasing burden of the office, together with a recent serious illness, prompted the resignation of Doctor Hillkowitz as chairman of the Board of Registry. His successor, who was chosen by the members of the Board to fill the vacancy, is Doctor Lall G. Montgomery, the pathologist of the Ball Memorial Hospital, of Muncie, Indiana. The Registry will be situated at the hospital.

The great success of the work of the Registry has been due in large part to the enthusiastic support which has been given the work by pathologists, hospitals, and educational institutions throughout the country. It is the hope of the Board of Registry and the Registry staff that the change in location will in no way interrupt the success of the work.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

July 26, 1940

DR. WILLIAM M. NICHOLSON (reading the clinical summary): The patient, a 58 year old, white farmwoman, was admitted to the hospital complaining of low back pain and bleeding of the gums and nose of four weeks' duration.

Past History: The patient's general health had been excellent. Six years before admission to the hospital she had had recurring lower thoracic pain which was described as being dull and non-radiating. Associated with the pain was oliguria, dysuria, nocturia, urgency, pyuria and hematuria. These attacks lasted from four to six days and recurred at intervals of about six weeks, for a period of one year. No chills, fever, colicky pains or edema were associated with the attacks. She had been free from the attacks for five years.

Present Illness: During the six months that preceded her admission to the hospital the patient had noticed progressive weakness, fatigability, irritability and loss of 15 pounds in weight. Occasionally she noticed a fairly severe bilateral lumbar pain similar in character to that experienced six years before. There had been no change in her bowel habits, no tenesmus or colicky pain. Four weeks before entry she began to have frequent epistaxis, bleeding from her gums, and an increase in the severity of the lumbar pain. Several days later she passed clots of blood in her urine, with associated dysuria; this symptom persisted for only a few days and did not recur. Following extraction of two teeth she had profuse bleeding from her gums. Approximately ten days before admission she had several severe attacks of epistaxis, one of which lasted eight hours. At this time she also noticed that her stools were black and tarry, and that ecchymoses and purpuric areas appeared over her entire body. No history could be obtained of any exposure to toxic drugs or metals.

Physical Examination: The temperature on admission was 38 C.; the pulse was 98, respirations 22, and blood pressure 96 systolic, 70 diastolic. The patient was a fairly well developed, emaciated white woman with a cadaverous complexion. She was groaning constantly with pain. The skin was dry and pale. There were purpuric spots on the extremities, the face, chest and abdomen. The mucous membranes were nearly colorless. There was a small, firm, immobile nodule in the left sternoclavicular angle; there was a similar node in the right axilla. Except for some pain on motion and tenderness to palpation over the sacrum and both sacro-iliac joints, the skeletal system was normal. The pupils were quite small and did not react to light or accommodation. The sclerae were quite blue. The nose showed large blood crusts in each nostril. The lips were dry and crusted with blood; the tongue was coated and dry. Blood was oozing from the gums. On the soft palate there were a few purpuric spots. The lungs were clear. The heart was not enlarged. There was a soft systolic murmur heard at the apex and over the pulmonic area. The abdomen was distended but soft, with no masses or tenderness. The liver, spleen and kidneys were not felt. Pelvic examination revealed no abnormalities; the rectal examination was also normal except for the presence of a small amount of tarry stool. The neurological examination was normal.

Accessory Clinical Findings: The blood Wassermann and Kahn reactions were negative. The hemoglobin was 4.8 Gm., or 31 per cent. Red blood cells were 1,700,000. White blood cells were 3000. The color index was 1.0. The mean corpuscular hemoglobin content was 32×10^{-12} Gm. The mean corpuscular volume was 70 cubic micra. Platelets were 200,000. Examination of the fresh blood smear showed slight anisocytosis and poikilocytosis with a moderate number of macrocytes present; however the majority of the red cells were smaller than normal. There were a moderate number of nucleated red blood cells. Reticulocytes were estimated at 6.8 per cent. Attempts to obtain sternal bone marrow were unsuccessful. The differential formula on the peripheral blood revealed polymorphonuclear neutrophil segmenters, 46 per cent; stabs, 19 per cent; juveniles, 2 per cent; polymorphonuclear eosinophils, 5 per cent; myelocyte neutrophilic, 1 per cent; myelocyte eosinophilic, 1 per cent; small lymphocytes, 13 per cent; large lymphocytes, 3 per cent; monocytes,

10 per cent. Erythroblasts were 4 per cent in the peripheral blood. *Repeated urinalysis:* The urine was dark amber in color, with a specific gravity (highest recorded) of 1.015, an acid reaction, no sugar, a 1 plus reaction for albumin, two or three white cells, an occasional red cell, numerous casts, and a positive benzidine reaction. Frequent examination of the stools after ether extraction, showed a 4 plus benzidine reaction. Examination for Bence-Jones protein in the urine gave no reaction. Bleeding time by the "Ivy" method was seventeen minutes; the clotting time was four minutes. The blood non-protein nitrogen was 49 mg. per 100 cc., and the blood uric acid was 4.9 mg. per 100 cc. The serum van den Bergh gave an indirect reaction, with 1.2 mg. of bilirubin per 100 cc. The serum calcium was 10.4 mg. per 100 cc., and the phosphorus was 5.1 mg. per 100 cc. The phosphatase was 11.2 Bodansky units. The serum albumin was 4.6 Gm. per 100 cc., with an albumin-globulin ratio of 1.7:1. The prothrombin time was 25 seconds; the control was 16. Gastric analysis revealed 0.6 cc. of 0.1 normal free hydrochloric acid after histamine. An x-ray of the skull showed no abnormalities. A flat plate of the abdomen showed what appeared to be a collection of gallstones. The kidneys were not clearly seen. The spine and pelvis showed no evidence of metastases. There was marked distention of the loops of small intestines noted in the flat plate of the abdomen. A gastro-intestinal series could not be satisfactorily performed; however, the six-hour barium was present within large loops of dilated ileum, and at twenty-four hours the barium was still in the tremendously dilated loops of the small bowel.

Course in the Hospital: The patient remained in the hospital for thirteen days. Transfusions were started immediately, and during her stay in the hospital she received a total of twelve transfusions, each of 500 cc.. Within the first three days of hospitalization she showed some signs of improvement, but there was never any cessation of bleeding from the mouth. There was progressive distention of the abdomen, and a few days before death there was bleeding from the rectum. She also developed an increasing number of purpuric spots over her entire body. There was no appreciable change in the white count during her stay, the maximum recorded being 7600. Her temperature remained between 37 and 38 C., except on her last day of life, at which time it rose to 41 C. On the day before death the hemoglobin was 53 per cent, the red blood cells 2,770,000, and the white cells 6500, with no appreciable change in the number of platelets. On the thirteenth hospital day she suddenly became comatose and could not be aroused. Her temperature had risen to 41C., and her blood pressure, which had previously been 114 systolic, 80 diastolic, rose to 174 systolic, 90 diastolic just before her death. Examination revealed all the extremities to be flaccid. The right pupil was dilated, and there was a large fresh hemorrhage obscuring the fundus and disk of the right side. The patient expired one hour after lapsing into coma.

Discussion

DR. NICHOLSON: The symptoms that must be explained before any satisfactory conclusions are reached regarding the final illness, are as follows: malaise, weight loss, lumbar pain, purpura, epistaxis, hematuria, melena, anemia, and coma with abnormal neurological signs.

Undoubtedly this patient had a rather extensive lesion of the central nervous system which produced the sharp elevation in her temperature and the neurological findings that were demonstrated immediately before death. Petechiae and ecchymoses were an important part of the picture, and it would appear that the epistaxis, hematuria and melena were due to the same condition—that is, abnormal bleeding. I would predict that postmortem examination will reveal multiple hemorrhages in the brain.

The anemia may be due to two factors: (1) chronic blood loss, and (2) interference with the blood forming organs. To support this view there was slight leukopenia, with an increase in the young forms, and thrombopenia. Reticulocytes and nucleated red cells were present in the circulating blood; therefore it would seem that the remaining bone marrow was making an effort at red blood cell regeneration. Since the platelets were not below the critical level, it may be that the cachexia played some role in the production of the purpura. There are several diseases that come to mind which extensively involve the bone marrow, and which should be considered in the differential diagnosis.

The differential formula of the leukocytes suggests the possibility of leukemia in the aleukemic stage; however, the absence of enlargement of the liver, spleen or lymph nodes, in a patient who has been ill for six months, would make the diagnosis of leukemia unlikely. Multiple myeloma is a distinct possibility, since the course of the disease is not unlike that presented by this patient. However, changes in the skull shown by x-ray examination are among the first findings in multiple myeloma. Since this patient did not show any abnormalities of the skull, and since no Bence-Jones protein was demonstrated in the urine, it is most unlikely that she had multiple myeloma. In hyperparathyroidism of long duration one would expect to see a picture not unlike that demonstrated here; however the duration of the illness seems rather short to produce such extreme anemia without some evidence of decalcification of the bones. Furthermore, the normal serum calcium and phosphorus, even with an elevated phosphatase, would exclude hyperparathyroidism. It would seem then that the most likely possibility to explain the bone marrow involvement is extensive invasion by metastatic malignancy.

I would like to ask Dr. Hansen-Pruss his opinion in regard to the study of the peripheral blood.

DR. OSCAR C. HANSEN-PRUSS: The peripheral blood picture is that of a severe, slightly hypochromic and microcytic anemia with leukopenia and a moderate thrombopenia. The increase in reticulocytes probably signifies some attempt at red blood cell regeneration stimulated by the persistent bleeding. There are also many erythroblasts in the peripheral blood, and these are probably, in part, another evidence of increased red blood cell regeneration. However, the number of erythrocytes is a bit high, and this suggests that factors other than an increased intramedullary erythropoiesis play a role. This possibility is further enhanced by the progressive anemia, which cannot be due merely to loss of blood, since the color index remains normal. The persistent leukopenia is also unusual for an anemia which is due only to blood loss. For this reason it is suggested that an intrinsic disease of the bone marrow is present. The best possibility is invasion of the bone marrow by some neoplasm other than multiple myeloma. That it is not a multiple myeloma is assumed only because of the absence of plasma cells in the peripheral blood, and mainly because of the clinical data at hand. If postmortem findings should show extensive cancer of the bone marrow, some of the evidence of increased erythropoiesis is probably the result of extra-medullary red blood cell regeneration. The differential white blood cell picture does not rule out a leukemia, except that one would expect a higher percentage of immature myeloid or lymphoid series in the presence of such severe anemia in a patient who has been ill for several months. As to the purpura, the number of platelets is above the critical level for such persistent bleeding. I suggest that the bleeding is, therefore, not due simply to a lack of platelets, but to some other factor or combination of factors, such as a secondary increase in capillary permeability; decrease of the fibrinogen content of the blood might also be a derangement of hepatic function *per se*, or the result of multiple miliary implantations of cancer in the liver. In conclusion I would like to say that the blood picture suggests that this patient has a malignant process such as carcinoma with extensive invasion of the bone marrow, and that her anemia is not due only to chronic blood loss. I shall be very much interested to see whether pathological studies will show cancer in the bone marrow and evidences of extramedullary blood formation.

DR. NICHOLSON: That this patient has a malignancy is supported by the fact that six months previous to entry she felt tired, with general malaise, progressive weight loss and severe lumbar pain. Further evidence to support this view is the fact that a firm lymph node was palpable in the left supraclavicular fossa.

The suggestion made by Dr. Hansen-Pruss that the excessive bleeding may have been due to a decreased fibrinogen content of the blood is very significant in pointing to the liver as a site of metastases, particularly so in view of the elevated blood phosphatase. It is not necessary, however, to incriminate the liver, since the elevated phosphatase may be due to involvement of the bones by the malignancy.

The localization of the primary carcinoma is very difficult. Primary carcinomas of the bronchi, even though they metastasize to the bone, can be excluded by the normal x-ray

of the chest. A hypernephroma as far advanced as it would be in this patient would most surely show metastases to the lungs. At this time I would like to ask Dr. Reeves his opinion of the partial gastro-intestinal x-rays.

DR. ROBERT J. REEVES: Unfortunately a complete gastro-intestinal series could not be satisfactorily done, but we have evidence of an obstruction or paralytic ileus of the small intestine. It is possible that there may be metastatic lesions in the mesentery or retroperitoneum producing the partial obstruction.

DR. NICHOLSON: In view of the fact that there was considerable distention of the small intestine and retention of barium at the end of twenty-four hours, it would seem that an obstructive lesion was present in the small intestine or in the proximal portion of the large bowel. Cancer of the jejunum and ileum is extremely rare, and I, personally, have never seen a case diagnosed *ante mortem*. It is my understanding, however, that more symptoms of obstruction with absence of obstipation develop relatively early than with cancer of the large bowel. Certainly one would expect that this patient would have developed nausea and vomiting long before her death if the primary cancer had been in the small bowel. The one site of localization for the cancer in this patient would of necessity be in the proximal portion of the colon, which notoriously tends to produce less symptoms than a carcinoma of the distal portion. The reasons for this are:

(1) The liquid content of the bowel in this segment.

(2) The lesions are more apt to be large and ulcerating and occur more frequently on the lateral wall, therefore producing less obstruction.

(3) In this portion of the colon the lumen is considerably larger and the wall is thinner than on the distal portion.

It is interesting to note, also, that carcinomas in this area frequently produce pain in the lumbar region, such as this patient had. The symptomatology of cancer of the proximal portion of the colon may be divided into three groups:

(1) The group that has no symptoms until late in the disease.

(2) The so-called dyspeptic group, characterized by recurring attacks of lower right quadrant pain and frequently diagnosed as appendicitis.

(3) The group that this patient represents—that is, slow onset of weakness, malaise and anemia.

I would like to offer the following as an anatomical diagnosis of this case:

(1) Carcinoma of the proximal portion of the colon with metastasis to the bone.

(2) Multiple petechiae, probably in the brain.

Pathological Findings

DR. DOUGLAS H. SPRUNT: The anatomical diagnosis in this case was: colloid adenocarcinoma of the hepatic flexure of the colon with metastases to the regional lymph nodes, lungs, and vertebral, sternal and femoral marrow; fibrosis of bone marrow; partial obstruction of the colon by tumor with dilatation of the proximal and contraction of the distal segments of the colon; extramedullary blood formation in the liver and spleen; hemorrhages in the skin, gastro-intestinal tract, and renal pelvis; multiple abscesses in the kidneys; diffuse myocardial fibrosis; adenoma of the thyroid gland.

These findings are in complete agreement with Dr. Nicholson's discussion. It should be said that the bone marrow metastases were extensive. We were not allowed to examine the brain.

New Squibb Capsule Contains 5 Synthetic B Complex Factors

A miniature capsule containing five synthetic factors of the vitamin B complex is now being supplied by E. R. Squibb & Sons, New York, in Syntheplex-B Capsules. Each capsule contains:

1 mg. (333 U.S.P. XI [Int.] units) thiamine hydrochloride (vitamin B_1)
1 mg. riboflavin (vitamin G; B_2)
0.5 mg. pyridoxine hydrochloride (vitamin B_6)
0.5 mg. calcium pantothenate (a filtrate factor)
10 mg. nicotinic acid amide (nicotinamide)

Chief indication for the new product is in the treatment of vitamin B complex deficiency where it is desirable to increase the intake of these five factors beyond the practicable limits of dosage with natural B complex sources. Physicians wishing to experiment with pyridoxine and pantothenic acid in combination with the other synthetic B complex factors will also find it useful, as will persons who cannot tolerate yeast, or who cannot take large capsules. It is emphasized, however, that Syntheplex-B Capsules are not a substitute for a product containing the entire natural vitamin B complex.

Recommended dosage for adults is two or more capsules daily; for infants and children, one or more daily.

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

Mr. L. E. C., a white railroad brakeman, 53 years of age, was admitted to the hospital in a semi-comatose irrational state.

Due to the mental condition of the patient no direct information could be obtained. The information that we have was obtained from his son and from his private physician. For the past two years the patient had been getting gradually weaker, tiring more easily, and sometimes going to bed as early as 6 p. m. and always before 7:30 p. m. He arose at 5:30 a. m. to go to work at 7:00 a. m. He worked seven days a week, but during the last six months he had to take off one or two days a week to rest. His only complaint had been rheumatism which occurred just before rainy spells. Two months before admission the patient developed a cough and cold, apparently without fever, and took cough syrup to relieve his cough. About four weeks before admission, during the influenza epidemic, he was sick at home with severe cough and general malaise. He had chilly feelings followed by sweating, and for these he took aspirin. He then returned to work for about two weeks. Seven days before admission he called his private physician, complaining of pain in the left side of the chest of two days' duration. He was coughing a good deal, but would not remain in bed. His physician found no fever, but did find a large area of pleurisy in the left chest, and redness of the throat. The next day he seemed better. Two days later he was again visited by his physician, and was found to be no better. An elevated white count was found. He was given sulfathiazole, and his wife reported that he improved. Three days before admission he was again seen by his physician, and was found to be delirious and disoriented, getting up and changing from one bed to another in the house. On the day of admission a neurological consultation was held and the following findings were noted: "The patient is in a restless state, tossing from side to side in bed. He is confused, disoriented and stuporous. There are some nystagmoid movements of both eyes with evidence of improper fusing. No changes are noted in the eye grounds. The neurological examination is otherwise not abnormal, in so far as tests could be made. There is a generalized lymphadenopathy and evidence of considerable enlargement of the liver and spleen." The patient was sent to the hospital following this consultation.

The past history is essentially negative. The patient had regularly passed his railroad physical examinations. He had never had nose bleeds, had slept well, and had had no kidney or bowel complaints. He had never had any enlargement of his lymph nodes and never any ascites.

The patient was a well developed, well nourished white male who appeared to be of the age stated. He was lying in bed in a comatose condition. The head was normal. The throat was inflamed. There was limited expansion of the chest on the left side, with dullness to percussion over the lower portion of the chest and increased breath sounds over and adjacent to this area. The heart was not enlarged, but a systolic murmur was heard over the apex. The rate was rapid and the rhythm regular. The abdomen was slightly distended. The liver was enlarged to about 3 inches below the costal margin, firm and easily palpable. The spleen was easily palpable. There was some evidence of a fluid wave. The extremities were not abnormal. The axillary and inguinal lymph nodes were enlarged, fairly hard but not tender. On admission the temperature was 105.6 F., but it fell within three hours to 102 F. The pulse was 120 and the respirations were 12. On the second hospital day the patient developed some rigidity of the neck, with a tendency to draw his head backward. His temperature ranged between 101 and 103 F., his pulse from 100-120, and his respirations from 18-20. An x-ray examination of the chest on the third hospital day was reported as follows: "Examination of the chest with the patient in bed shows some haziness in the right costo-phrenic area. While this is suggestive of a pneumonic process the changes are not typical. There is an old fibrosis in this region with a band extending from the hilus to the periphery which is probably of inflammatory origin. The chest is otherwise normal." On admission there were 3,390,000 red blood cells, 10 Gm. of hemoglobin, and 25,300 white blood cells, with 3 per cent stabs, 7 per cent segmented cells, 63 per cent lymphocytes, and 27 per cent monocytes. The urine was am-

ber, clear and acid. The specific gravity was 1.021. No albumin or sugar was present and the sediment was negative. The spinal fluid was negative. The blood Kline test was negative. Two days after admission the red cell count was 4,400,000, the hemoglobin 10.5 Gm., and the white cell count 24,100, with 12 per cent segmented cells, 51 per cent lymphocytes and 37 per cent monocytes. The patient's temperature and pulse gradually went up to 107 F. and 140 respectively, and the patient died on the fourth hospital day.

Discussion

DR. W. L. KIRBY: One point not brought out in the history is whether or not the cough was productive either before admission or after the patient came to the hospital.

DR. E. A. MACMILLAN: I think that the cough was not productive.

DR. KIRBY: I think that there are a number of diagnoses to be considered, one of which is primary carcinoma of the bronchus. The patient had a non-productive cough over a long period of time before the acute onset of illness. On the other hand, this condition would not likely produce a generalized adenopathy. The lack of pulmonary hemorrhage does not favor the diagnosis of primary carcinoma of the bronchus. Also, the cases that I have observed developed effusion during the latter stage, with dyspnea and occasionally cyanosis. I believe that we can rule out carcinoma of the bronchus.

One must consider the possibility of chronic lung abscess. The patient had a cold, followed by chills and sweats. He also had had pleurisy. On the other hand, there was no foul odor of the sputum, nor was there anything said of his having had a foul breath. The blood findings are not those of an abscess. There is a predominance of lymphocytes. Do we have any x-rays of the chest?

DR. RODICK: We only have one film. He could not hold his breath.

There is a little bit of fuzziness throughout, which is not typical of anything. There may have been something in the costophrenic space.

DR. KIRBY: The physical findings in this patient were all on the left side of the chest, while I noticed that the x-ray findings were all on the right side. The only reference to physical findings both in the home and in the hospital were on the left side. The x-ray certainly rules out abscess.

Although the Kline test was negative, this patient had an enlarged liver, enlarged spleen, and general lymphadenopathy. If he had syphilis, it was tertiary, which diagnosis the physical findings and blood examination does not substantiate. Patients with tertiary lues who have enlargement of the liver and spleen are apt to be jaundiced. Therefore, I would pass up syphilis as a diagnosis.

Malignancy is certainly to be considered, as this man had been losing strength for two years. Possibilities are multiple myeloma, lymphatic leukemia, lymphosarcoma, and Hodgkin's disease. The onset of the disease and the rheumatic pain are both suggestive of a latent type of Hodgkin's disease. Lymphocytosis, enlarged spleen and enlarged liver are present in the late stages of lymphoblastoma. A patient may have Hodgkin's disease without enlargement of the external nodes at all. As to multiple myeloma, I am sure that there is no destruction of any of the ribs in the chest x-ray, and in the latter stage of myeloma there is usually partial destruction of the ribs, spine and skull. Frequently pathological fractures occur. The course is usually slow; the patient usually lives six or seven years. That brings us back to the lymphoblastoma group. A biopsy from one of the enlarged nodes would have been helpful in deciding which of the group this patient had. Lymphosarcoma frequently produces bulky tumors and skin nodules, which this patient did not have. The total leukocyte count is somewhat low for lymphatic leukemia in an untreated case. I would make a diagnosis of Hodgkin's disease.

DR. W. M. JOHNSON: The late Dr. D. N. Dalton had a reputation for making diagnoses of unusual cases by remembering a similar case he had had previously. The case just presented reminds me very strongly of a patient of mine who died not long ago. The duration of illness was just about the same; my patient had a suddenly developing, rather extensive pleurisy, which was followed by effusion; and his total leukocyte count did not at any time go above 25,000. He had, I am sure, chronic lymphatic leukemia. In spite of the rather low total count in this case, I think I will follow Dr. Dalton's method and make a diagnosis in this case of lymphatic leukemia.

Clinical Diagnosis

Lobar pneumonia.
Acute leukemia.

Dr. Kirby's Diagnosis

Hodgkin's disease.

Dr. Johnson's Diagnosis

Lymphatic leukemia.

Anatomical Diagnosis

Lymphatic leukemia.
Co-arctation of the aorta.
Coronary sclerosis.
Aortic valvulitis, origin undetermined.

DR. FROST: At autopsy it was proven that this man had a lymphatic leukemia. The retroperitoneal lymph nodes were markedly enlarged. The liver extended 6 cm. below the costal margin, weighed 3,170 Gm., and was mottled with pale gray leukemic infiltrations. The spleen weighed 1220 Gm. and contained a large infarct which resulted from a thrombus of one of the large veins. The lymphatic infiltrations were found also in the kidneys. Nothing was found in the lungs except moderate congestion. In the aorta there was found a marked constriction at the junction of the descending arch and the thoracic portion, which reduced the lumen to 2.6 cm. in circumference. This finding is apparently only of academic interest, as the patient was able to pass his railroad physical examinations. Permission was not obtained for examination of the brain.

DR. BROOKS: How do you account for the large number of monocytes in the differential count?

DR. FROST: I don't remember that I saw the blood smears on this patient. I think probably they were lymphoblasts rather than monocytes.

DR. POOLE: I think that I might say here that at the time I saw him the man had influenza superimposed on this other disease.

The Practice of Medicine. — The recipe of the practice of medicine contains two important ingredients, the science and the art of medicine, which must be so subtly blended that a mixture is created that does not predominate in one constituent at the expense of the other. Furthermore, the same blend is not appropriate for all occasions; the mixture must be one that lends itself to expert administration in varying individual instances.—F. A. Willius, M.D.: A Talk on the Science and the Art of Medical Practice, Proc. Staff Meet., Mayo Clinic, 15:648 (October 9) 1940.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Malpractice: Application of the Doctrine of Res Ipsa Loquitor. This rule, which loosely means 'the thing speaks for itself', is no doubt familiar in a way to most physicians, especially to those who have been so unfortunate as to have had personal experience with malpractice litigation. This rule has been invoked quite extensively in cases against physicians and surgeons in suits for negligence in the treatment of patients. To illustrate the application of the doctrine, or at least one phase of it, a case was selected in which a textile operative 54 years of age brought suit against a well known and reputable surgeon for an injury alleged to have been caused by the negligence of the defendant in not using due skill and care while the plaintiff was a patient in the defendant's hospital, under his treatment. The facts as alleged in the complaint are essentially as follows: The patient, following an automobile accident, was admitted to the defendant's hospital in an unconscious condition, and upon examination the small bone of the leg was found to be fractured somewhere between the knee and ankle. The defendant immediately applied a cast on the affected leg, and after twenty-five days, as the healing was unsatisfactory, the doctor deemed it advisable to fracture the large bone and reset the fracture and apply another cast. This was done. Subsequently, according to the complaint (the exact time was not given), the leg became swollen, and burst, and abscesses formed. The patient also complained of cuts sustained by faulty equipment, and alleged that when he left the hospital after seventy days the injured leg was turned inward at a right angle, so that he could not walk without the foot coming in contact with the opposite leg each time he attempted to take a step. There were also the usual complaints of physical suffering, mental anguish and permanent injury. The patient's testimony was mostly in substantiation of the facts alleged in the complaint, and it is indicated that the jury had an opportunity to observe the results of the treatment; however, according to records, no medical testimony was offered in his behalf.

In answering, the defendant denied the allegations of the plaintiff, and as a further defense said that the plaintiff's injuries, if any, were due to his own carelessness and failure to follow instructions at the time he left the hospital. The defendant did not offer any testimony, but at the completion of the plaintiff's evidence his lawyer asked for and was granted a nonsuit, whereupon the plaintiff appealed. It is reasonable to assume that the defendant was in a position to offer testimony in rebuttal which would throw a more favorable light on his side of the question, but as the case was nonsuited at the completion of the plaintiff's evidence, this was not necessary at the time.

It was held in this case as follows by the Court of Appeals: "The granting of defendant's motion to nonsuit at the close of the plaintiff's evidence was error, plaintiff's injury being simple in its nature and the results shown by the evidence being so grotesquely contrary to all human experience as to afford some evidence for the jury that the bones were never properly set or were permitted to grow out of their proper relation through want of due care and attention." And as further remarks, the court stated: "We are urged to adopt the view that recovery cannot be had in any suit against physicians and surgeons for malpractice in the absence of expert medical testimony, except where the facts give rise to the application of the doctrine of res ipsa

loquitor." The above simply means that when one sues a doctor for negligence in treatment that it is encumbent upon him to furnish expert testimony with reference to the matter; otherwise he will be precluded from recovering. However, if the results are non-technical and are such as can be recognized and understood by the ordinary person the rule of res ipsa loquitor will be invoked.—North Carolina Supreme Court Report, Book 214, p. 71.

BULLETIN BOARD

PRESIDENT'S MESSAGE

North Carolina's Unsolved Medical Problem

The effort to bring health to all of our people is now on the minds and consciences of all the citizens of the United States.

In January, 1941, the Medical Induction Board at Fort Bragg reported the rejection of 422 out of 2403 recruits examined. This number was 17.5 per cent of the total number of selectees from North Carolina appearing before the board. This number does not include those rejected by their own local medical boards, which will more than double these figures. In other words, 40 per cent of our young men are physically unfit. The proportion of these men with remediable defects was high.

Government agencies are now planning to bring medical aid to the indigent of this defective group, in order that they may be rehabilitated for useful military or civilian work. We should remember that there is no free medical aid given by the government, because it is all paid for by the taxpayers of the country. The only really free medicine is that given gratuitously by the physicians themselves to the indigent or to those that class themselves as such. In 1940 North Carolina paid into the National Treasury $329,191,420 in federal taxes. The sum of $875,169 was made available by the Federal Government in 1940 to the North Carolina State Board of Health. This sum was distributed to the County Health Division, the Division of Maternal and Child Welfare (including the Crippled Children's Service), and the Division of Venereal Disease Control. In 1939 the State Legislature allotted a total of $438,370 to the State Board of Health. The North Carolina State Board of Health in its personnel and in the service rendered to the people of the state compares favorably with any state in the Union by the standards set by the United States Public Health Service, the United States Children's Bureau, the International Health Board of the Rockefeller Foundation, and the American Public Health Association. In spite of these facts, we still have nineteen counties which have not cooperated in appropriating funds for whole time public health departments.

On the basis of a population of 3,500,000 people in the state, the $1,313,539 in tax money from all sources entrusted to our excellent State Board of Health for all health services to all the people of the state allows only 37 cents per person for the year. It is true that many people of our state do not directly need the gratuity of this organization and its funds, yet in a direct as well as an indirect way its influence on the population as a whole is a necessary and potent factor in the preservation of its health. In 1938 North Carolina ranked forty-fifth in the United States in hospital beds of all kinds, with 5.05 beds per 1000 inhabitants. The average in the United States was 8.9 beds per 1000 inhabitants. In 1936 North Carolina ranked forty-sixth among the states in physicians, with one practicing physician per 1,346 inhabitants. Durham County has one licensed physician for every 261 inhabitants; Tyrell has one for every 5,164 inhabitants. There are 141 colored physicians in the state. In the fourteen counties where they serve they represent one physician for every 5,890 of the country negro population, and one for every 1,699 of urban negro population. The other fifty-six counties contain 88,105 negroes.

The problem for North Carolina is how to meet the medical needs of our state. We cannot redistribute our physicians, as economic and scientific factors influence their location. The care of the indigent is, of course, the weakest point in the program. The weakness here seems to be the inadequate sums appropriated by our legislative bodies to pay for medical care. No county has as yet found a real solution to the problem of providing equal medical care to a population which includes indigents and millionaires. Compulsory sickness insurance meets a small section of the problem by giving the low income groups a superficial service paid for by distributing the burden over both well and sick, and among employees, employers and the government; but this leaves the indigent untouched. There is a growing class of the medically indigent in North Carolina. Some are worthy, many are not. Good food, good

housing, and good sanitation are fundamental to health. They are lacking among the indigent. To meet these problems more generous appropriations of tax funds spent under medical direction and through medical centers, with the continued and expanded cooperation of health officers and local medical societies and physicians, are a necessity. Subsidies and grants to pay reasonable medical fees, to establish new hospitals, and to maintain old hospitals where they are needed, seem imperative to a balanced program to rehabilitate the diseased and to care for the medically indigent.

HUBERT B. HAYWOOD, M. D.

SECRETARY'S MESSAGE

The opportunity to serve a friend does not come any too often. There are many doctors in North Carolina who covet the opportunity to do something for Tom Long. He served us all in season and out of season, in the Legislature and in the humbler walks of his professional life. With no pretense of taking his place, I am grateful to the Executive Committee for giving me the opportunity, and with the cooperation of many friends, I am encouraged in the hope that the duties of the office will be satisfactorily performed until a successor is elected at the next meeting of the House of Delegates. I am glad to serve the Society in the interim.

I. H. MANNING, M. D.

NEWS NOTES FROM WAKE FOREST COLLEGE

The Eighth District Medical Society and the Bowman Gray School of Medicine of Wake Forest College are planning a joint program for the day of the laying of the cornerstone of the new medical school building in Winston-Salem, on April 16. Dr. Nathan B. Van Etten, President of the American Medical Association, will be the guest speaker for the occasion. The program for the day is as follows:

Eighth District Medical Society Meeting
1:30 p. m.

Dr. Robert L. McMillan: "Massive Hemorrhage from the Stomach and Duodenum—Its Causes and Treatment"
Discussant—Dr. Wingate Johnson.

Dr. C. L. Haywood, Jr.: "Pre-operative Skin Disinfection with 70 per cent Alcohol by Weight"
Discussant—Dr. W. H. Sprunt, Jr.

Dr. L. D. Tyson, Jr.: "Breech Deliveries"
Discussant—Dr. C. H. Mauzy.

Dr. Samuel F. Ravenel: "Chemotherapy of Bacillary Dysentery"—Lantern Slides
Discussant—Dr. L. J. Butler.

Dr. F. K. Garvey: "Present Status of Testosterone"
Discussant—Dr. H. C. Harrell.

Dr. Paul W. Johnson, President of the Eighth District Medical Society, will preside at the above meeting.

At 4:00 p. m. the exercises of the laying of the cornerstone will be held. Dean C. C. Carpenter will preside.

Program of Exercises

Invocation: Dr. John R. Cunningham, President of Davidson College.

Greetings: Dr. W. C. Davison, Dean, Duke University School of Medicine; Dr. W. Reece Berryhill, Dean, University of North Carolina School of Medicine.

Introduction of Guest Speaker: Dr. Wingate M. Johnson, President, Board of Trustees of Wake Forest College.

Address: Dr. Nathan B. Van Etten, President, American Medical Association.

Laying of Cornerstone: Mrs. Bess Gray Plumly.

Concluding Remarks: Dr. Thurman D. Kitchin, President, Wake Forest College.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

An active program of research on the chemistry and metabolism of quinine and related compounds is being carried on by the Department of Biological Chemistry of the Medical School of the University of North Carolina. In this work the above department, directed by Dr. James C. Andrews, is cooperating with Dr. Harold W. Brown of the School of Public Health of the University of North Carolina in an investigation of the behaviour of quinine in malaria cases complicated by hookworm. This research program is being supported by the Samuel S. Fels Fund of Philadelphia.

Two papers from the Department of Biological Chemistry are now in press: one entitled "The Optical Activity of Quinine and Some of Its Salts in Mixtures of Water and Ethyl Alcohol", by James C. Andrews and Bailey D. Webb to be published in the Analytical Edition of **The Journal of Industrial and Engineering Chemistry**, and the other entitled "The Estimation of Small Amounts of Quinine in Blood and Other Biological Materials", by Granvil C. Kyker, Bailey D. Webb and James C. Andrews, in **The Journal of Biological Chemistry**.

* * *

Dr. M. J. Rosenau, Dean of the School of Public Health, was called to Washington during March to attend a conference with the Surgeon General of the U. S. Public Health Service relative to the organization of orientation course for new public health personnel to be employed in national defense work.

* * *

Dr. A. Watts Makepeace and Dr. Lawson will attend meetings in Washington on March 24, 25, and 26 in connection with the maternal and infant work of the Children's Bureau, U. S. Department of Labor.

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Professor H. B. Gotaas, of the faculty of the School of Public Health, presented a paper on the "Disinfection of the Air" at the March meeting of the Elisha Mitchell Scientific Society.

* * *

Dr. Wm. deB. MacNider, Chairman of the American Division of the Club for Research on Ageing, attended the annual meeting of this organization in Baltimore, March 22 and 23.

* * *

Dr. John A. Ferrell, of the Rockefeller Foundation, spent some time in Chapel Hill recently visiting the School of Public Health. He talked to the students and faculty of the School.

News Notes from the North Carolina Tuberculosis Association

The North Carolina Tuberculosis Association will hold its annual meeting at the King Cotton Hotel in Greensboro on Wednesday, April 30, 1941. This will be an open meeting, and the public is cordially invited and urged to attend. The program will be a joint meeting of medical and non-medical groups. There will be a morning session beginning at 10:00 o'clock and a luncheon meeting at 1:15. Dr. H. E. Kleinschmidt, the Director of Health Education of the National Tuberculosis Association, New York City, will be the main speaker at both sessions. His topic for the morning session will be "Authorized Forms of Tuberculosis Work and County Organization". Dr. P. P. McCain, the President of the National Tuberculosis Association, will appear on the morning program. Others to talk at this session are the State President of the North Carolina Federation of Woman's Clubs; Dr. R. L. Carlton, City Health Officer of Winston-Salem; Dr. Charles W. Armstrong, First Vice President of the State Tuberculosis Association, Salisbury; and Dr. W. H. Smith, Second Vice President of the State Association, Goldsboro. The first prize winning essay in the National Tuberculosis Association national Negro College Contest will be read by its author, Miss Evelyn Love of Bennett College. The title of this essay is "The Role of the Negro College in the Control of Tuberculosis". Mrs. Charles E. Platt, of Charlotte, President of the North Carolina Tuberculosis Association will preside at the morning meeting.

News Notes from the State Board of Health

Heart trouble was the leading cause of death in North Carolina in 1940, claiming approximately one person out of every six of the 32,194 for whom death certificates were filed with the State Board of Health, or a total of 5,451, with a rate of 153 per 100,000 population, compared with 1,780 in 1914, the first year of registration, when the rate was 74.4, less than one-half of what it was for the year recently ended.

For many years tuberculosis was the No. 1 cause of death in this State, but that now ranks eighth, while heart diseases continue to maintain a firm first, year after year.

Pneumonia deaths last year totaled 2,041, with a rate of 57.1, compared with 100.5 in 1914. As late as 1936 the rate was 93.7; by 1938 it had dropped to 77.7, and in 1939 it was 59.5.

There was a noticeable increase in deaths from preventable accidents in 1940, when these totaled 1,535, compared with 1,481 the previous year. "These and deaths from preventable and controllable diseases add unnecessarily to our death rate," Dr. Reynolds pointed out, "and it would be unfair to attribute them to unhealthful conditions, as each one represents a mistake or negligence somewhere."

"As to diphtheria, while deaths from this preventable disease are on the decline, the rate having fallen from 15.8 in 1914 to 3.3 in 1940, and while we have a compulsory immunization law with which the public ought to be familiar by this time, the responsibility, in the last analysis, is a moral and not a legal one and rests with parents."

The number of deaths from pellagra, a disease attributable to nutritional deficiencies, was 169 in 1940, compared with 209 the previous year, which brought the rate within a single year down from 5.9 to 4.7. In 1914 it was 23.6; by 1936 it had dropped to 10.3, and as late as 1938 it was 7.3.

The vital statistics report for 1940, prepared under the direction of Dr. R. T. Stimpson, shows there were 80,971 births in North Carolina, compared with 78,957 in 1939, the rate having risen from 22.3 to 22.7 for this period.

The infant mortality rate fell from 59.1 to 56.3, but the maternal death rate rose from 5.0 to 5.3. However, this problem is being vigorously attacked by the Board of Health's Division of Preventive Medicine, of which Dr. George M. Cooper, Assistant State Health Officer, is the Director, through the operation of nearly 200 maternity and infancy clinics and the establishment of two professorships at the School of Public Health at the University of North Carolina and at Duke University. Dr. A. W. Makepeace, obstetrician, and Dr. Robert B. Lawson, pediatrician, already are helping to train workers.

The death rate from tuberculosis in 1940, which was 49.9, as compared with 51.3 the previous year and 139.3 in 1914, continued its downward trend, while there was a decided decrease in the number of deaths from diarrhea and enteritis among children under two years old. In 1940 there were 500 of these infant deaths, compared with 666 in 1939, while the rate in a single year fell from 18.8 to 14.0. In 1914 it was 81.2, and as late as 1938 it was 29.2. The toll from this infantile disease is heaviest during the summer months.

The total death rate from all causes last year was 9.0.

* * *

In the March issue of **The Health Bulletin**, Dr. D. F. Milam reported on the nutritional survey made in Chatham county last year. The following extracts are taken from this article:

"If all the adult records are put together and averaged for the unit of a single individual, a generalized picture for the community as a whole can be assumed. Such a procedure shows that Chatham community has a caloric intake of about 2,000 calories per individual per day and that the portion of this that is made up of carbohydrates is low and the percentage of fat high (41%). The protein intake (meat, milk, etc.) is just on the borderline of normal (55 grams). However, the vitamin B_1 intake, which vitamin is found in the same foods as protein, is only about 60 per cent of the recommended level. When this vitamin is low there is a tendency to decrease carbohydrates and increase fats, as has occurred here. A diet too high in fats is less digestible.

"Riboflavin is a vitamin found at its highest percentage in milk and milk products, turnip and mustard greens, peanuts, liver, and to a lesser extent in many other foods. The riboflavin intake of this community is about one half to two thirds of the recommended level. About this same percentage of normal intake fits the two needed mineral elements, calcium and iron. The vitamin A intake is slightly below the recommended level."

Correction

In the February issue of the **North Carolina Medical Journal**, a mistake appeared in the news notes from the State Board of Health. A correction should be made in the following sentence from Mr. John D. Faulkner's radio address, "Rats and Their Relation to Disease": "In the past ten years over 13,000 cases have been reported to the State Board of Health during this period, with the majority of cases occurring in the past four years." This sentence should read: "In the past ten years over 13,000 cases have been reported and the number of cases reported each year is increasing. In North Carolina, 564 cases and 46 deaths have been reported to the State Board of Health during this period, with the majority of cases occurring in the past four years."

American Academy of Pediatrics

Region Two of the American Academy of Pediatrics will meet at the John Marshall Hotel in Richmond, Virginia, April 24 and 25. Any physician interested in children is invited to attend. The following program will be presented:

PROGRAM

Thursday, April 24, 1941

9:00-10:00 a. m. Registration.
10:00 a. m. Round Table Discussion.
Mental Health of the Child as Related to National Defense.
Chairman: Dr. Horton Casparis, Professor of Pediatrics, School of Medicine, Vanderbilt University.
Co-Chairman: Dr. Harvie DeJarnette Coghill, Director, Children's Memorial Clinic and Assistant Professor of Pediatrics and Neuropsychiatry, Medical College of Virginia.
12:30-2:00 p. m. Luncheon.
2:00-4:30 p. m. Round Table Discussion.
Nutrition of the Child as Related to National Defense.
Chairman: Dr. Frederick F. Tisdall, Associate Professor of Pediatrics, University of Toronto.
Co-Chairman: Dr. W. H. Sebrell, Chief, Division of Chemotherapy, National Institute of Health.
6:00 p. m. Cocktail Hour.
7:00 p. m. Dinner.

Friday, April 25, 1941

9:00-10:00 a. m. Food Contaminations and Poisons.
Dr. George Marshall Lyon, Huntington, W. Va.
10:00 a. m. Round Table Discussion.
Communicable Diseases and Their Relations to the Child During National Defense.
Chairman: Dr. Wilburt C. Davison, Professor of Pediatrics, and Dean, School of Medicine, Duke University.
Co-Chairman: Dr. M. Hines Roberts, Professor of Pediatrics, School of Medicine, Emory University.
12:30-2:00 p. m. Luncheon.
2:00 p. m. Business Meeting.

North Carolina Neuropsychiatric Association

The North Carolina Neuropsychiatric Association met at Duke Hospital at 2 p. m. on March 28. The following program was presented:

2:00-2:45—Inspection of the new out-patient and in-patient psychiatric clinics, Duke Hospital. Demonstrations of electroencephalography.
2:45-3:15 — (Amphitheatre) Dr. Hans Loewenbach: "The Technique, Interpretations and Value of Electroencephalography."
3:15-3:45—Dr. Edward Stainbrook: "Some Observations on the Value and Significance of the Rorschach Tests."
3:45-4:30—Dr. W. P. Beckman, of the Columbia, S. C., State Hospital: "Problems and Progress in Mental Hygiene in South Carolina."
4:30-5:30—Dr. Walter Freeman, of Washington, D. C.: "Indications, Procedures and Results in Prefontal Lobotomies."
5:30-6:00—Business meeting of members.
6:00—Collation or "tea" at Dr. Crispell's home.

Officers of the Society are Dr. Mark A. Griffin, Asheville, President; Dr. Archie A. Barron, Charlotte, Vice President; Dr. Malcolm D. Kemp, Pinebluff, Secretary-Treasurer.

Lectures on Infantile Paralysis

In April a series of six lectures on Infantile Paralysis by outstanding medical authorities will be presented at Vanderbilt University, Nashville, Tennessee. These lectures are sponsored by the National Foundation for Infantile Paralysis.

Dr. Ernest W. Goodpasture, head of the Department of Pathology at Vanderbilt, is supervising the arrangements.

The schedule as arranged by Dr. Goodpasture is as follows:

April 7, Monday—The History of Poliomyelitis (Progress of the knowledge of the disease up to the present)
Dr. Paul F. Clark, Professor of Bacteriology, University of Wisconsin School of Medicine.

April 8, Tuesday—The Etiology of Poliomyelitis (Including its relation to diagnosis)
Dr. Charles Armstrong, Senior Surgeon, U. S. Public Health Service.

April 9, Wednesday—Immunity to Poliomyelitis (Including Serum, Therapy and Vaccination)
Dr. Thomas M. Rivers, Director, Hospital of the Rockefeller Institute for Medical Research.

April 14, Monday—Pathology and Pathogenesis of Poliomyelitis
Dr. Ernest W. Goodpasture, Professor of Pathology, Vanderbilt University School of Medicine.

April 15, Tuesday—Epidemiology of Poliomyelitis
Dr. John R. Paul, Yale University School of Medicine.

April 16, Wednesday—Treatment and Rehabilitation of Poliomyelitis Patients
Dr. Frank Ober, Assistant Dean, Harvard University Medical School.

The lectures will be held in the amphitheatre of the Vanderbilt Medical School at 8 o'clock each evening, and are open to all interested persons.

Catawba Valley Medical Society

The Catawba Valley Medical Society conducted a program on Pathology at the March 12 meeting in Lenoir. A number of the state's leading pathologists participated in a new type of program.

1. "Glossitis" by Dr. L. M. Caldwell, Newton.
2. "Virus: A Review of Our Present Knowledge," by Dr. Alfred Blumberg, Asheville. Discussion by Dr. J. B. Bullitt of Chapel Hill.
3. "Plasma Transfusions," by Dr. Paul Kimmelstiel, Charlotte. Discussion by Dr. T. H. Byrnes, Charlotte.
4. Case Reports.
5. A medical question and answer "Dr. Quiz" feature, in which the members of the society acted the role of "Dr. Quiz" and the visiting pathologists the roles of the question answerers.

Buncombe County Medical Society

At the first monthly meeting of the Buncombe County Medical Society, held on March 3, Dr. Edwin J. Chapman talked on "Cancer of the Larynx". On March 17, Dr. Morris Fishbein, Editor of the **Journal of the American Medical Association**, was the guest speaker at the Executives' Club Dinner, held at the George Vanderbilt Hotel. Dr. Fishbein's subject was "Socialized Medicine".

Forsyth County Medical Society

On March 11 the Forsyth County Medical Society, meeting at the Robert E. Lee Hotel in Winston-Salem, held a Symposium on Influenza. Speakers were Dr. W. deK. Wylie, who discussed influenza from the standpoint of diagnosis; Dr. C. A. Street, who gave the pediatrician's viewpoint; Dr. J. A. Harrill, who discussed nose and throat complications; and Dr. E. A. MacMillan, who spoke on the nervous and mental manifestations.

Guilford County Medical Society

The Guilford County Medical Society met at the Sheraton Hotel in High Point, March 6, at 6:30 p. m. Dr. John A. Kolmer, Professor of Medicine in charge of Bacteriology and Immunology at Temple University Medical School, gave an address on "The Present Status of Active Immunization Against Disease".

Mecklenburg County Medical Society

Dr. Oren Moore and Dr. W. Z. Bradford were the speakers at the first monthly meeting of the Mecklenburg County Medical Society, held on March 4. Dr. Moore spoke on "The Management of Prolonged Labor", and Dr. Bradford's subject was "A Comparative Study of the Complications of Pregnancy in the White and Colored Races, As Observed in 2000 Consecutive Pregnancies". On March 18 Dr. William Allan spoke on "Problems in Heredity", Dr. Tom W. Baker gave a paper on "The Mechanism of Cardiac Pain and Its Differentiation From Chest Pains of Radicular Origin", and Dr. Joseph Elliott gave a discussion of the "Diagnosis of Skin Disease", with kodachrome demonstrations. A technicolor film on "Gonadotropic Hormones" was shown, with talkie remarks by Dr. S. L. Seigler, New York City.

Course in Tropical Medicine

The Department of Medicine of the New York Post-Graduate Medical School offers a five day course in Recent Advances in Tropical Medicine, May 19 to 23. The course will be under the direction of Dr. Z. Bercovitz. Applications should be addressed to The Director, 309 East 20th Street, New York City.

American Medical Golfing Association

The American Medical Golfing Association will hold its twenty-seventh annual tournament at Cleveland Country Club and Pepper Pike Club in Cleveland, Ohio, on Monday, June 2, 1941. Members may tee off from 7:30 a. m. to 2 p. m. Thirty-six holes of golf will be played in competition for the fifty trophies and prizes in the eight events.

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the AMGA. Write Executive Secretary Bill Burns, 2020 Olds Tower, Lansing, Mich., for application blank. Participants in the AMGA tournament are required to present their home club handicap, signed by the club secretary, at the first tee on the day of play. No handicap over 30 is allowed. Only active Fellows of the AMGA may compete for prizes. No trophy is awarded a Fellow who is absent from the annual dinner, which is always worthwhile waiting for!

United States Civil Service Examinations

SENIOR MEDICAL OFFICER, $4,600 A YEAR
MEDICAL OFFICER, $3,800 A YEAR
ASSOCIATE MEDICAL OFFICER, $3,200 A YEAR

Public Health Service, Federal Security Agency
Food and Drug Administration, Federal Security Agency, Veterans' Administration
Civil Aeronautics Administration, Department of Commerce
Indian Service, Department of the Interior

Applications must be filed with the United States Civil Service Commission, Washington, D. C. They will be rated as received and certification made as the needs of the service require. When sufficient eligibles are obtained, the receipt of applications will be closed, in which case due notice will be given.

A subsequent application will not be accepted from any applicant within three months of the date of receipt of his preceding application under this announcement.

When an applicant who has been rated eligible in this examination for any of the grades listed above files a subsequent application, but is found ineligible for a higher grade than that for which he has been rated, his application will be canceled and no additional rating will be assigned him in the grade for which he is already eligible.

* * *

The United States Civil Service Commission hereby amends Announcement No. 101 to include the options indicated under the following grades:

Senior Medical Officer
Option 4. Public Health (General)

Medical Officer
Associate Medical Officer
Option 15. Diagnosis and Treatment of Cancer

Further information regarding the examination is contained in the original announcement.

This amendment replaces the previous amendment. Issued: March 24, 1941.

News Notes

Dr. Hartwell Cocke of Asheville gave a lecture on intestinal tuberculosis during the post-graduate course conducted by the American College of Physicians at the Mayo Clinic, February 21.

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Dr. Oren Moore of Charlotte has recently been made President-Elect of the South Atlantic Association of Obstetricians and Gynecologists. Dr. W. B. Bradford of Charlotte was placed on the North Carolina State Board of the association.

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Dr. Wilmer Grantham of Asheville spoke at the annual meeting of the Southeastern Section of the Urological Association in Jacksonville, Florida, February 21.

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An article by Dr. John Dougherty of Asheville, entitled "Venography, a Clinical Study", was published in **Surgery, Gynecology and Obstetrics**, December, 1940.

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Dr. William Allan of Charlotte spoke before the Greenville (South Carolina) County Medical Association on February 3. His subject was "Problems in Heredity".

An article entitled "Effect of Fear on Diagnosis", by Dr. J. P. U. McLeod of Marshville and Dr. J. D. Highsmith of Fayetteville, appeared in the **Medical Record** for January 1.

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Dr. Howard M. Starling of Winston-Salem has been certified by the American Board of Surgery.

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Dr. Harry Winkler of Charlotte has been certified by the American Board of Orthopedic Surgery.

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Dr. James F. Marshall of Winston-Salem has been certified by the American Board of Surgery.

WOMAN'S AUXILIARY

ATTENTION LADIES

District Councillors and Secretaries, please rush your 1940-'41 dues to Mrs. E. C. Judd, Raleigh, N. C. The dues must go in at once in order to get credit with the A. M. A.

A MESSAGE FROM THE PRESIDENT

The Spring Board meeting was held at the home of the president, Mrs. Clyde R. Hedrick of Lenoir, on April 4. Reports of the year's work were made by all the officers, and plans for the state meeting were made. We will be honored this year with an address by Mrs. V. E. Holcombe, President of the Auxiliary to the A. M. A. I am sure that her presence will be an inspiration to us all, and our meeting at Pinehurst should be well attended. Plan now to attend the state meeting with your husband.

AN APPEAL FOR HELP FOR THE ORGANIZATION OF MEDICAL AUXILIARY IN NORTH CAROLINA

Dear Doctors' Wives:

This letter to you is somewhat delayed, owing to a hospital experience. But now that I am rapidly convalescing, I do want to get in touch with you at once because I need some information very badly, and need it quickly.

I am very anxious to find out two things.

I. How many medical auxiliaries and district organizations there are in the state.

II. Where we can organize new auxiliaries and who will help me organize the new auxiliaries.

Therefore, I am addressing this letter to the councillors in the state, and also to the organized auxiliaries and to every interested doctor's wife in the state.

Will you please help me get at once the names and addresses of each officer of each auxiliary and district? Write this information on a postal card and send it to Mrs. C. F. Strosnider, Box 245, Goldsboro, N. C.

May I also ask you to send me immediately the following information, which I must have for my state and national report.

1. Number of auxiliary meetings held.
2. Number of meetings held by the auxiliary for lay organizations.
3. Average attendance at each meeting.
4. Number of eligible doctors' wives in the district. (*Eligible* means wives whose husbands are members of the county medical society).
5. What type of work has your auxiliary done this year?
6. What key positions do doctors' wives hold in your district?

This information is very important if our state is to make a good showing in our national report. So I appeal to you please to send it to me. If you can't secure all the information, send me what you can of the six headings I have requested.

As time goes on, and national conditions become more complicated, the greater is the need for a well organized auxiliary to the Medical Society of the State of North Carolina. I do hope there will be many new auxiliaries formed this year.

How many can we organize in your district?

Can I be of any service in helping to organize an auxiliary in your district?

I have some very good pamphlets on organization sent me by Mrs. Allen, National Organization Chairman. These pamphlets tell in detail how to organize auxiliaries. Please let me know if you would like for me to send you some of these pamphlets, and call upon me if I can be of any service.

Let's organize!

As doctors' wives, it is not only our privilege to do this, but it is our duty and responsibility to help, in any way possible, to carry on the great work of our husbands.

Hoping you will send me the requested information, and organize your locality, I am

Very sincerely,

ANNA L. STROSNIDER,
Organization Chairman.
MRS. C. F. STROSNIDER,
Box 245
Goldsboro, N. C.

NOTICE

Only a few more weeks and the members of the Woman's Auxiliary to the American Medical Association will be arriving in Cleveland for their Annual Convention, June 2-6. Have you made your reservations? If not, send your request, *at once*, to Dr. Edward F. Kieger, Chairman of Committee on Hotels and Housing, 1604 Terminal Tower Building, Cleveland.

In Memoriam

DR. T. W. M. LONG

At its regular monthly meeting of March, the Forsyth County Medical Society adopted the following resolutions:

WHEREAS a beloved friend and fellow worker, Dr. T. W. M. Long, has been forever taken from our midst,

BE IT RESOLVED: That the members of the Forsyth County Medical Society express their sincere regrets at his loss and extend to his family their deep sympathy.

The Society is mindful of the untiring efforts and the extensive services which Dr. Long gave in behalf of his profession. The Society is also conscious of the great benefits shared by every doctor in North Carolina, resulting from these activities. They have been so enumerated through the press and observed personally that it would be superfluous to mention them here.

The Society wishes to recognize these inestimable values, and to extend its most sincere condolence to the family. In Dr. Long's untimely death the medical profession of North Carolina has suffered a great loss.

BE IT RESOLVED further, that a copy of these resolutions be sent to the family of the deceased, to the **North Carolina Medical Journal** and be incorporated in the minutes of the Forsyth County Medical Society.

Signed by the Committee:

G. Carlyle Cooke, M.D.
C. H. Mauzy, M.D.
A. deT. Valk, M.D.
J. B. Whittington, M. D.
Wortham Wyatt, M.D.

The Versatility of Genius.—The guidance of gifted children is made more difficult by their versatility. Intellect by its very nature is highly general, and it follows that to one who is intellectually superior many fields of achievement are possible if the requisite interests and drives are present. The versatility of a few geniuses has received considerable attention, but the less spectacular cases are overlooked. People like to believe that the genius as a rule is no better than the rest of us except in one particular. The facts are very different. Except in music and the arts, which draw heavily on specialized abilities, there are few persons who have achieved great eminence in one field without displaying more than average ability in one or more other fields.—Lewis M. Terman: Psychological Approaches to the Biography of Genius, Science, 92: 297 (October 4) 1940.

BOOK REVIEWS

Principles of Hematology. By Russell L. Haden, M.A., M.D., Chief of the Medical Division of the Cleveland Clinic, Cleveland, Ohio. Second edition, thoroughly revised. Price, $4.50. Pp. 362, with 104 illustrative cases, 167 illustrations including 173 original photomicrographs, and 100 original charts and drawings. Philadelphia: Lea & Febiger, 1940.

The second edition, following so rapidly on the first edition, is a good indication of the worth of this book. It is written with the aim of simplifying the study of disorders of the blood, and it succeeds very well. The author has accomplished this simplification by thoroughly stressing the fundamental principles on which the variations of the blood depend, rather than by being sketchy and incomplete. The book is especially well illustrated. The series of charts illustrating the mechanism of anemia, polycythemia, leukocytosis, and leukopenia serves to present the essential pathology in a clear, forceful and easily understood manner. The large number of photomicrographs of the blood cells are unusually good—much better than the vast majority of drawings usually seen. The large number of cases representing the various types of blood dyscrasias are particularly valuable. The most valuable laboratory procedures are well presented. Unusual and difficult technical methods such as supravital staining and puncture of the bone marrow have not been included because of the special skill and experience that are required. Likewise unusual variations in the blood cells and rare blood dyscrasias have not been discussed. These conditions still puzzle experienced students of the blood and are beyond the ability of the average physician. To the second edition have been added a discussion of the role of Vitamin K, and several technical methods which were omitted in the first edition.

Electrocardiography in Practice. By Ashton Graybiel, M.D., Instructor in Medicine, Courses for Graduates, Harvard Medical School; Research Associate, Fatigue Laboratory, Harvard University; Assistant in Medicine, Massachusetts General Hospital; and Paul D. White, M.D., Lecturer in Medicine, Harvard Medical School; Physician, Massachusetts General Hospital, in charge of the Cardiac Clinics and Laboratory. Cloth. Price, $6.00. 319 pages with 272 illustrations. Philadelphia and London: W. B. Saunders Company, 1941.

This book, after a brief but clear introductory discussion of the principles and technique of electrocardiography, gives in detail every disorder of the heart, with large reproductions of actual electrocardiograms. These are grouped in logical order, and only actual cases are presented. The book can be highly recommended to anyone who wishes to learn how to apply the electrocardiograph to actual clinical practice.

Management of Fever. — The important indications to keep in mind in the management of fever are: first, physical and mental rest; second, adequate quantities of water; third, more or less adequate caloric intake; fourth, hydrotherapy; and fifth, restoration of vitamins.—Walter L. Niles, in a Conference on the Management of Fever, New York State Journal of Medicine, 40:1741 (December 1) 1940.